DOCUMENT RESUME

ED 230 768 CE 036 227

AUTHOR	McGhee, Max B.; Cheek, Jimmy G.
TITLE	Competency Test Items for Fundamentals of Agribusiness and Natural Resource Occupations. A Report of Research.
INSTITUTION	Florida Univ., Gainesville. Inst. of Food and Agricultural Sciences.
PUB DATE	Apr 83
NOTE	165p.; For related documents, see CE 036 228-232.
PUB TYPE	Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	*Agribusiness; *Agricultural Education; Agricultural Engineering; Agricultural Occupations; *Agronomy; *Animal Husbandry; Behavioral Objectives; Business Administration; Competency Based Education; *Criterion Referenced Tests; Grade 9; Multiple Choice Tests; Natural Resources; Secondary Education; *Soil Science; Student Leadership; Student Organizations; Student Participation; Test Construction; Test Items; Vocational Education
IDENTIFIERS	Florida; Future Farmers of America

ABSTRACT

An activity was undertaken to develop written criterion-referenced tests for each of the instructional areas comprising the Fundamentals of Agribusiness and Natural Resources Occupations Program. Designed to be taught at the ninth grade level, the program consists of six major instructional areas: agribusiness management, animal science, plant science, soil science, agricultural mechanics, and leadership. Criterion-referenced tests were developed from the lists of competencies compiled for each instructional area. Project results were a list of specific competencies for the fundamentals of the Agribusiness and Natural Resources Occupations program and an item bank of multiple choice test items and answer keys for the six common core instructional areas. Criteria for selecting items from the item bank for testing purposes were recommended. (Two tables display summary statistics and complete item analyses for each question in the item bank. Appendixes, amounting to approximately four-fifths of the report, contain the list of competencies, test items, and answer keys for the common core instructional areas.) (YLB)

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COMPETENCY TEST ITEMS FOR FUNDAMENTALS OF AGRIBUSINESS AND NATURAL RESOURCES OCCUPATIONS

A Report of Research

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April, 1983

CE036227

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ACKNOWLEDGEMENTS

The writers wish to express gratitude to the agribusiness and natural resources education teachers, state administrative staff in agricultural education, teacher educators in agricultural education, and county supervisors in agricultural education throughout the state of Florida who participated in development and critique of these instruments. Without their assistance, this study would not have been possible.

Thanks also go to the graduate students who were involved with this study; specifically Glenn Osterhout, Coleen Kaczor, Gail Chesnut, and Teron Jackson. Appreciation is also extended to Lynne Kirkland, Barbara Schatt, and Roxann Mayros for typing this document, and to Jane McCoy for the art work.

TABLE OF CONTENTS

PAGE

Acknowledgements.. i

List of Tables.. iii

Introduction.. 1

Purpose... 4

Procedure... 5

Results... 6

Table 1... 8

Table 2... 12

Table 3... 17

Table 4... 21

Table 5... 22

Table 6... 25

Table 7... 27

Recommendations... 29

References.. 30

Appendix A - Competencies for the Instructional Areas.... 31

Appendix B - Test Items Animal Science................... 37

Appendix C - Answer Key Animal Science................... 69

Appendix D - Test Items Agricultural Mechanics........... 74

Appendix E - Answer Key Agricultural Mechanics........... 100

Appendix F - Test Items Leadership....................... 105

Appendix G - Answer Key Leadership....................... 111

Appendix H - Test Items Plant Science.................... 113

Table of Contents (continued)

PAGE

Appendix I - Answer Key Plant Science.................... 129

Appendix J - Test Items Agribusiness Management.......... 133

Appendix K - Answer Key Agribusiness Management.......... 143

Appendix L - Test Items Soil Science...................... 146

Appendix M - Answer Key Soil Science...................... 159

LIST OF TABLES

Table		Page
1	Summary Statistical Data Relative to the Six Instructional Areas of Fundamentals of Agribusiness and Natural Resources	8
2	Item Analysis of the Item Bank of Questions for the Instructional Area of Animal Science	12
3	Item Analysis of the Item Bank of Questions for the Instructional Area of Agricultural Mechanics	17
4	Item Analysis of the Item Bank of Questions for the Instructional Area of Leadership	21
5	Item Analysis of the Item Bank of Questions for the Instructional Area of Plant Science	22
6	Item Analysis of the Item Bank of Questions for the Instructional Area of Agribusiness Management	25
7	Item Analysis of the Item Bank of Questions for the Instructional Area of Soil Science	27

Introduction

The Vocational Education Act of 1963 and the Vocational Education Amendments of 1968 provided the foundation upon which the scope of traditional vocational education programs have been broadened and new programs have been initiated. As a result, vocational agriculture/agribusiness has been characterized by accelerated growth, expanded program offerings, and increased emphasis. For example, in 1967-68 Florida had 229 vocational agriculture/agribusiness departments and employed 284 teachers. According to Kirkland (1979), by the 1978-79 school year the number of departments had increased 62 percent (373 departments) and the number of teachers employed had increased by 103 percent (576 teachers). In the 1982-83 school year, there were 409 departments employing 573 vocational agriculture teachers (Department of Agricultural and Extension Education, University of Florida, 1982).

During this same period of time, there has been an increased emphasis regarding the need to develop and improve approaches for evaluating educational programs. Currently, a great deal of attention is being given to the concept of accountability in education. Effective educational evaluation is vital for improving education programs since it provides the basis upon which to determine the merits of existing programs, the need for new programs, and revision of existing programs.

In this atmosphere of accountability, legislators, educators, and the general public are asking if expenditures for vocational education are producing desired results and funding agencies are asking for evaluative information upon which to base policy decisions. Moreover, a review of the Vocational Educational Amendments of 1976 (American Vocational Journal, 1976) makes it clear that the writers of that legislation expect evaluations of vocational education programs to yield data and information useful in formulating ongoing and future policy program decisions. However, from a review of a report to the Governor of Florida, it is obvious that sufficient data regarding the effectiveness of vocational education is not available, thus lending further support for the need to investigate this area (Governor's Commission on Secondary Schools, 1983).

In addition, competency-based education is a development receiving considerable attention in the literature and from professional educators. Florida is currently involved in a major effort to implement competency-based vocational education (Harrington, Johnson, Fagan, Freedman, and Reichman, 1976; Fagan and Huckaby, 1982). Using this instructional model, the curriculum is built around objectives that industry recognizes as necessary for employment. In addition, this model places major emphasis on evaluation of educational programs in terms of pre-specified outcomes, requiring that program outcomes be specified in terms of the behaviors, competencies, and performance capabilities expected of students completing instructional programs. Consequently, one measure of program effectiveness is the extent to which students completing or leaving an instructional program possess or fail to possess the behaviors and competencies specified in the instructional objectives. In instructional systems of this nature, test information is not only used to evaluate program effectiveness, but can also be used to evaluate the student's mastery of instructional objectives as an aid to placing students in appropriate employment or in additional instructional situations (Glasser and Nitko, 1971). Instruments or tests designed especially for this purpose are known as criterion-referenced tests (Hambleton and Novick, 1972).

Criterion-referenced tests are defined as tests made up of items keyed to a set of specific behavioral objectives (Ivens, 1970). Others have defined a criterion-referenced test as one that is deliberately constructed so as to yield measurements that are directly interpretable in terms of specified performance standards (Glaser and Nitko, 1971).

Criterion-referenced instruments have not been developed so that program effectiveness and student achievement can be assessed in most areas of agribusiness and natural resources. This activity was designed to develop criterion-referenced tests for each of the instructional areas comprising the Fundamentals of Agribusines and Natural Resources Occupations program.

The Fundamentals of Agribusiness and Natural Resources program is primarily designed to be taught at the ninth grade level and consists of six major instructional areas with each designed to utilize the following amounts of a 180 day school year.

Instructional Area	Hours
Agribusiness Management	20
Animal Science	30
Plant Science	30
Soil Science	25
Agricultural Mechanics	40
Leadership	20
Total	175

In addition, five hours are set aside for orientation to the program and school.

More detailed descriptive information and specific planning data are available in the publication A Suggested Curriculum Guide for Fundamentals of Agribusiness and Natural Resources Occupations (Panhandle Area Educational Cooperative and Florida Department of Education, 1980).

Purpose

The central purpose of this study was to develop and field test written criterion-referenced tests for the Fundamentals of Agribusiness and Natural Resources Occupations program. In order to achieve this purpose, the following objectives were developed as guidelines for conducting the research:

1. Develop and compile a list of competencies for each of the instructional areas of Fundamentals of Agribusiness and Natural Resources Occupations program.
2. Develop criterion-referenced tests for each of the six instructional areas in the Fundamentals of Agribusiness and Natural Resources Occupations program.
3. Field test the instruments in order to determine instrument validity and reliability, and to determine item difficulty, item discrimination, and point-biserial correlation for each test item.

Procedure

Objective 1

Based upon the objectives identified in the Fundaments of Agricultural Occupations Curriculum Guide (State of Florida, 1980), a list of competencies were generated and compiled. This list was reviewed and modified by a group of teachers, the Florida Department of Education regional consultants for agribusiness, and University of Florida faculty members at a Curriculum Development Workshop held in August, 1980 (Panhandle Area Educational Cooperative and Florida Department of Education, 1980). The competency statements reported in this document have undergone minor refinements in wording since their original publication in 1980. These competencies represent the performance standards relating to fundamentals that students should master prior to entering specialized programs of agribusiness and natural resources education.

Objective 2

Using the competency statements derived in Objective 1, test items were developed for each competency statement. A consultant staff of teachers, regional consultants, and University faculty members were asked to review and revise the items developed. The consultant staff was specifically asked to accomplish the following tasks:

1. To review and revise individual test items.

2. To make certain that the items were technically accurate.

11

3. To verify that the item did assess the competency it was purported to address.

As a result of this activity, minor changes were made in the tests.

Objective 3

The tests were field tested by administering them to groups of students who had completed the Fundamentals of Agribusiness and Natural Resources Occupations program. The data from the field tests were analyzed for item difficulty, item discrimination, and point biserial correlation. A Kuder-Richardson 20 Correlation was calculated as the measure for test reliability.

Results

The major results of this project were: a list of specific competencies for the Fundamentals of Agribusiness and Natural Resources Occupations program (see Appendix A) and an item bank of multiple choice test items and answer keys for the common core instructional areas of: animal science (see Appendix B); agricultural mechanics (see Appendix D); leadership (see Appendix F); plant science (see Appendix H); agribusiness management (see Appendix J); and soil science (see Appendix L).

Summary statistics relative to the common core component of Applied Principles are presented in Table 1. The estimates of reliability of the tests by the Kuder-Richardson 20 correlation coefficients were as follows: animal science, .94; agricultural mechanics, .95; and leadership, .58; plant science, .86; agribusiness management, .65; and soil science, .79.

TABLE 1
Summary Statistical Data Relative to the Six Instructional Areas of Fundamentals of Agribusiness and Natural Resources

Instructional Area	Factor	Statistics
Animal Science	Number of Students Taking Test	34.00
	Total Number of Items on Exam	153.00
	Highest Possible Score	153.00
	High Score	117.00
	Low Score	10.00
	Mean Score	63.12
	Median Score	60.50
	Mode Score	70.00
	Standard Deviation	22.95
	Standard Error of Measurement	5.42
	Kuder Richardson 20 Correlation	0.94
Agricultural Mechanics	Number of Students Taking Test	26.00
	Total Number of Items on Exam	140.00
	Highest Possible Score	140.00
	High Score	106.00
	Low Score	0.00
	Mean Score	45.58
	Median Score	44.00
	Mode Score	40.00
	Standard Deviation	22.58
	Standard Error of Measurement	4.83
	Kuder-Richardson 20 Correlation	0.95
Leadership	Number of Students Taking Test	43.00
	Total Number of Items on Exam	31.00
	Highest Possible Score	31.00
	High Score	25.00
	Low Score	11.00
	Mean Score	20.23
	Median Score	21.00
	Mode Score	23.00
	Standard Deviation	3.34
	Standard Error of Measurement	2.17
	Kuder-Richardson 20 Correlation	0.58

Plant Science	Number of Students Taking Test	26.00
	Total Number of Items on Exam	100.00
	Highest Possible Score	100.00
	High Score	72.00
	Low Score	26.00
	Mean Score	45.15
	Median Score	41.00
	Mode Score	47.00
	Standard Deviation	12.12
	Standard Error of Measurement	4.58
	Kuder-Richardson 20 Correlation	0.86
Agribusiness Management	Number of Students Taking Test	24.00
	Total Number of Items on Exam	50.00
	Highest Possible Score	50.00
	High Score	34.00
	Low Score	13.00
	Mean Score	24.00
	Median Score	23.50
	Mode Score	28.00
	Standard Deviation	5.37
	Standard Error of Measurement	3.20
	Kuder-Richardson 20 Corelation	0.65
Soil Science	Number of Students Taking Test	36.00
	Total Number of Items on Exam	66.00
	Highest Possible Score	66.00
	High Score	49.00
	Low Score	16.00
	Mean Score	33.31
	Median Score	33.00
	Mode Score	27.00
	Standard Deviation	8.11
	Standard Error of Measurement	3.75
	Kuder-Richardson 20 Correlation	0.79

A complete item analysis for each question in the item bank relative to animal science; agricultural mechanics; leadership; plant science; agribusiness management; and soil science is displayed in Tables 2, 3, 4, 5, and 6 respectively. It may be observed that three statistics are presented: item difficulty; item discrimination; and item point biserial coefficient. Item difficulty (index of difficulty) is defined as the proportion of students who correctly answer an item. The average difficulty of a test is the average of the individual item difficulties. For maximum discrimination among students, an average difficulty of .60 is ideal.

Item discrimination (index of discrimination) is a numerical indicator of how the poorer students answered the item as compared to how the better students answered the item. The scores are divided into three groups with the top 27 percent in the lower group. The number of correct responses for an item by the lower group is subtracted from the number of correct responses for the item in the upper group. The differences in the number correct is divided by the number of students in either group. The process is repeated for each item.

The point-biserial correlation coefficient is computed for the relationship between a variable for which there are only two categories of scores and a variable for which the scores exist on a continuous distribution. Thus, it is a correlation coefficient indicating the relative degree of relationship between how a student responds to an item and the student's total score on the test.

It is recommended that the following criteria be used for selecting items from the item banks for testing purposes:

1. Select items that pertain to the instructional objectives which specify the outcomes sought in the instructional program.

2. Select items that have a positive item discrimination index (.3 or above) and a positive point biserial correlation coefficient.

3. Select items that were answered correctly by a substantial percentage of the students as indicated by the item difficulty score (.50 - .80 difficulty).

4. Select items that have high point biserial correlation coefficients thus indicating a relatively high relationship between how a student responds to the item and the student's total score on the test.

TABLE 2

Item Analysis of the Item Bank of Questions for the Instructional Area of Animal Science

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
1	0.97	0.11	0.18
2	0.85	0.44	0.38
3	0.82	0.44	0.40
4	0.41	0.44	0.31
5	0.71	0.22	0.23
6	0.44	0.33	0.26
7	0.35	-0.33	-0.23
8	0.29	0.56	0.48
9	0.85	0.22	0.12
10	0.44	0.56	0.38
11	0.62	0.56	0.34
12	0.74	0.44	0.46
13	0.18	0.00	-0.13
14	0.71	0.56	0.47
15	0.35	0.56	0.47
16	0.74	0.44	0.37
17	0.65	0.67	0.52
18	0.71	0.11	0.08
19	0.56	0.67	0.57
20	0.56	0.44	0.39
21	0.32	0.00	0.01
22	0.50	0.44	0.51
23	0.68	0.67	0.49
24	0.38	0.11	0.03
25	0.26	0.00	0.10
26	0.53	0.56	0.56
27	0.29	0.11	0.10
28	0.29	0.22	0.31
29	0.68	0.44	0.39
30	0.47	0.89	0.72
31	0.24	-0.11	-0.04
32	0.65	0.89	0.66
33	0.65	0.78	0.51
34	0.29	-0.44	-0.31
35	0.56	0.78	0.59

TABLE 2 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
36	0.56	0.56	0.35
37	0.44	0.78	0.61
38	0.47	0.56	0.40
39	0.50	0.33	0.39
40	0.65	0.78	0.62
41	0.59	0.56	0.41
42	0.59	0.44	0.44
43	0.44	0.67	0.55
44	0.15	0.33	0.38
45	0.24	-0.11	-0.15
46	0.62	0.56	0.51
47	0.21	0.44	0.50
48	0.38	0.56	0.48
49	0.35	0.67	0.55
50	0.35	0.44	0.48
51	0.53	0.56	0.48
52	0.38	-0.33	-0.18
53	0.29	0.33	0.33
54	0.44	0.56	0.47
55	0.18	-0.22	-0.21
56	0.09	-0.11	-0.11
57	0.41	0.33	0.30
58	0.35	0.22	0.32
59	0.59	0.78	0.51
60	0.50	0.67	0.53
61	0.50	0.11	0.23
62	0.65	0.44	0.33
63	0.71	0.56	0.37
64	0.26	0.00	0.10
65	0.26	0.44	0.37
66	0.38	0.44	0.40
67	0.21	-0.22	-0.11
68	0.35	0.33	0.38
69	0.15	0.22	0.16
70	0.44	0.33	0.33
71	0.12	0.11	0.12
72	0.38	0.44	0.39
73	0.29	0.56	0.46
74	0.29	0.44	0.48
75	0.26	-0.11	-0.14

TABLE 2 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimintion	Item Point Biserial Correlation
76	0.38	0.78	0.56
77	0.35	0.33	0.31
78	0.26	0.78	0.61
79	0.21	-0.33	-0.23
80	0.38	0.89	0.59
81	0.44	0.56	0.45
82	0.32	0.56	0.52
83	0.41	0.22	0.21
84	0.47	0.78	0.51
85	0.47	0.44	0.33
86	0.56	0.67	0.59
87	0.44	0.56	0.49
88	0.53	0.56	0.51
89	0.59	0.78	0.64
90	0.59	0.44	0.39
91	0.56	0.67	0.48
92	0.62	0.44	0.48
93	0.53	0.67	0.51
94	0.29	0.00	0.19
95	0.53	0.56	0.33
96	0.59	0.89	0.59
97	0.50	0.44	0.22
98	0.56	0.78	0.57
99	0.26	0.00	0.08
100	0.56	0.44	0.46
101	0.15	0.11	0.28
102	0.47	0.67	0.56
103	0.56	0.56	0.5[illegible]
104	0.35	0.44	0.53
105	0.41	0.56	0.32
106	0.35	0.67	0.48
107	0.26	0.67	0.55
108	0.41	0.22	0.20
109	0.26	0.56	0.51
110	0.12	-0.11	-0.07

TABLE 2 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Corelation
111	0.38	0.89	0.62
112	0.35	0.33	0.33
113	0.21	-0.11	-0.11
114	0.15	-0.11	-0.08
115	0.41	0.56	0.39
116	0.41	0.56	0.45
117	0.29	0.44	0.35
118	0.26	0.33	0.35
119	0.21	0.11	-0.02
120	0.59	0.78	0.61
121	0.35	0.33	0.44
122	0.38	0.33	0.38
123	0.24	-0.33	-0.19
124	0.41	0.44	0.30
125	0.18	-0.11	-0.01
126	0.24	-0.22	-0.24
127	0.18	0.00	0.02
128	0.18	0.11	0.10
129	0.53	0.33	0.20
130	0.47	0.22	0.33
131	0.44	0.44	0.28
132	0.38	0.00	0.05
133	0.29	0.11	0.05
134	0.41	0.22	0.28
135	0.26	0.22	0.18
136	0.09	0.00	-0.01
137	0.21	0.33	0.30
138	0.32	0.11	0.14
139	0.29	0.33	0.23
140	0.35	0.56	0.30
141	0.29	0.33	0.18
142	0.35	0.33	0.22
143	0.24	0.11	0.08
144	0.47	0.33	0.37
145	0.32	0.22	0.13

TABLE 2 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
146	0.38	-0.11	-0.10
147	0.26	0.33	0.28
148	0.32	0.56	0.43
149	0.29	-0.11	0.07
150	0.32	0.44	0.36
151	0.38	0.56	0.53
152	0.38	-0.33	-0.23
153	0.56	0.56	0.46

TABLE 3

Item Analysis of the Item Bank of Questions for the Instructional Area of Agricultural Mechanics

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
1	0.81	-0.14	-0.22
2	0.73	0.14	0.14
3	0.35	-0.14	-0.10
4	0.19	0.29	0.26
5	0.81	0.00	0.13
6	0.38	0.14	0.10
7	0.38	0.29	0.41
8	0.85	0.00	0.13
9	0.65	0.29	0.34
10	0.31	0.14	0.13
11	0.96	0.14	0.40
12	0.54	0.14	0.22
13	0.50	0.29	0.29
14	0.62	0.57	0.45
15	0.92	0.14	0.33
16	0.35	0.29	0.21
17	0.42	0.00	0.19
18	0.42	0.00	0.16
19	0.50	0.00	0.28
20	0.54	0.00	0.28
21	0.58	0.00	-0.01
22	0.46	0.14	0.30
23	0.35	0.14	0.32
24	0.42	0.29	0.32
25	0.73	0.14	0.22
26	0.35	0.29	0.33
27	0.50	0.29	0.27
28	0.35	0.14	0.21
29	0.15	0.00	0.15
30	0.23	-0.29	-0.16
31	0.54	0.00	0.23
32	0.31	0.29	0.32
33	0.54	0.29	0.33
34	0.23	0.00	0.02
35	0.54	0.57	0.41

TABLE 3 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
36	0.65	0.29	0.43
37	0.38	0.29	0.32
38	0.35	0.00	0.07
39	0.38	0.29	0.35
40	0.19	0.29	0.33
41	0.19	0.29	0.30
42	0.38	0.43	0.38
43	0.23	0.14	0.02
44	0.15	0.14	0.05
45	0.42	0.43	0.38
46	0.23	0.14	0.24
47	0.19	0.29	0.46
48	0.15	0.29	0.47
49	0.15	0.29	0.37
50	0.19	0.14	0.04
51	0.27	0.29	0.38
52	0.38	0.57	0.45
53	0.19	0.43	0.33
54	0.42	0.29	0.35
55	0.23	0.57	0.29
56	0.31	0.43	0.53
57	0.27	0.29	0.18
58	0.50	0.29	0.44
59	0.12	0.14	0.08
60	0.23	-0.29	-0.16
61	0.23	0.29	0.38
62	0.35	0.71	0.44
63	0.35	0.71	0.28
64	0.15	-0.14	-0.07
65	0.15	0.14	0.05
66	0.31	0.71	0.65
67	0.31	0.71	0.59
68	0.42	0.71	0.52
69	0.27	0.29	0.07
70	0.27	0.57	0.39
71	0.27	0.43	0.46
72	0.42	0.71	0.55
73	0.19	0.43	0.29
74	0.27	0.71	0.60
75	0.42	0.43	0.50

TABLE 3 (CONTINUED9)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
76	0.04	0.14	0.41
77	0.31	0.71	0.58
78	0.31	0.57	9.54
79	0.23	0.14	0.04
80	0.35	0.43	0.33
81	0.38	0.57	0.26
82	0.31	0.57	0.53
83	0.23	0.57	0.61
84	0.38	0.71	0.57
85	0.42	0.86	0.58
86	0.27	0.71	0.46
87	0.23	0.71	0.48
88	0.19	0.29	0.23
89	0.23	0.71	0.65
90	0.12	0.29	0.59
91	0.27	0.86	0.68
92	0.35	0.86	9.60
93	0.31	0.71	0.56
94	0.23	0.43	0.22
95	0.27	0.43	0.31
96	0.19	0.29	0.22
97	0.19	0.29	0.27
98	0.31	0.71	0.62
99	0.08	0.29	0.68
100	0.23	0.71	0.49
101	0.38	0.43	0.48
102	0.19	0.57	0.52
103	0.19	0.57	0.68
104	0.19	0.71	0.70
105	0.35	0.43	0.27
106	0.27	0.43	0.50
107	0.35	0.86	0.58
108	0.12	-0.14	-0.06
109	0.12	0.14	0.04
110	0.27	0.86	0.65

TABLE 3 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
111	0.23	0.57	0.60
112	0.23	0.57	0.60
113	0.23	0.43	0.33
114	0.27	0.57	0.58
115	0.12	0.14	0.32
116	0.35	0.71	0.60
117	0.38	0.86	0.60
118	0.27	0.29	0.05
119	0.31	0.71	0.61
120	0.27	0.57	0.46
121	0.38	0.86	0.60
122	0.23	0.29	0.42
123	0.35	0.71	0.60
124	0.35	0.43	0.44
125	0.23	0.57	0.39
126	0.23	0.43	0.43
127	0.19	0.29	0.33
128	0.19	0.43	0.48
129	0.42	0.71	0.57
130	0.27	0.29	0.42
131	0.19	0.14	0.43
132	0.23	0.29	0.43
133	0.08	0.14	0.35
134	0.31	0.57	0.59
135	0.15	0.00	0.24
136	0.15	0.14	0.23
137	0.31	0.29	0.28
138	0.15	0.43	0.56
139	0.31	0.71	0.49
140	0.27	0.43	0.42

TABLE 4

Item Analysis of the Item Bank of Questions for the Instructional Area of Leadership

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
1	0.95	0.00	-0.05
2	1.00	0.00	0.00
3	0.88	0.36	0.44
4	0.84	0.55	0.62
5	0.67	0.91	0.70
6	0.84	0.45	0.54
7	1.00	0.00	0.00
8	0.91	0.18	0.26
9	0.88	0.36	0.46
10	0.21	0.09	0.02
11	0.09	0.09	0.15
12	0.79	0.36	0.31
13	0.40	0.45	0.34
14	0.79	0.27	0.29
15	0.84	0.00	-0.01
16	0.77	0.27	0.30
17	0.23	-0.09	-0.17
18	0.37	0.64	0.47
19	0.58	0.00	0.09
20	0.37	0.00	0.05
21	0.44	-0.18	-0.16
22	0.44	-0.09	-0.06
23	0.70	0.00	0.06
24	0.37	-0.18	-0.21
25	0.81	0.55	0.61
26	0.91	0.36	0.62
27	0.74	0.73	0.58
28	0.70	0.73	0.65
29	0.58	0.55	0.43
30	0.26	0.55	0.52
31	0.91	0.27	0.41

TABLE 5

Item Analysis of the Item Bank of Questions for the Inutructional Area of Plant Science

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
1	0.92	0.14	0.23
2	0.15	0.29	0.38
3	0.31	0.29	0.12
4	0.27	0.14	-0.07
5	0.23	-0.57	-0.42
6	0.31	0.00	-0.08
7	0.31	0.57	0.49
8	0.31	-0.29	-0.25
9	0.38	-0.14	-0.11
10	0.54	0.00	0.09
11	0.23	-0.14	-0.31
12	0.73	0.29	0.22
13	0.69	0.43	0.37
14	0.65	0.57	0.56
15	0.77	0.43	0.50
16	0.73	0.71	0.61
17	0.69	0.43	0.32
18	0.62	0.29	0.18
19	0.27	0.14	0.04
20	0.58	-0.43	-0.31
21	0.54	0.29	0.10
22	0.54	0.43	0.39
23	0.54	0.57	0.45
24	0.54	0.57	0.46
25	0.54	0.71	0.37
26	0.27	0.29	0.29
27	0.27	0.00	0.14
28	0.46	0.43	0.43
29	0.46	0.29	0.20
30	0.50	0.71	0.65
31	0.58	0.43	0.33
32	0.35	0.71	0.48
33	0.38	0.14	0.02
34	0.65	0.71	0.40
35	0.42	0.57	0.38

TABLE 5 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
36	0.08	0.14	0.23
37	0.54	0.71	0.65
38	0.46	0.00	-0.01
39	0.38	0.00	-0.01
40	0.12	0.14	0.08
41	0.38	0.43	0.19
42	0.23	0.14	0.26
43	0.42	0.43	0.32
44	0.54	-0.14	-0.15
45	0.69	0.00	0.10
46	0.54	0.29	0.34
47	0.50	0.29	0.25
48	0.50	0.57	0.45
49	0.31	-0.43	-0.43
50	0.50	0.71	0.51
51	0.54	0.29	0.29
52	0.38	0.71	0.28
53	0.46	0.43	0.36
54	0.38	0.29	0.20
55	0.50	0.43	0.41
56	0.42	0.71	0.41
57	0.50	0.14	0.18
58	0.58	0.71	0.57
59	0.54	0.86	0.53
60	0.46	0.29	0.43
61	0.35	0.29	0.33
62	0.54	0.57	0.53
63	0.27	-0.14	-0.17
64	0.42	0.57	0.43
65	0.46	0.57	0.33
66	0.58	0.29	0.27
67	0.50	0.57	0.43
68	0.46	0.57	0.41
69	0.58	0.43	0.39
70	0.15	0.14	0.02

TABLE 5 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
71	0.46	0.57	0.33
72	0.58	0.71	0.51
73	0.62	0.43	0.23
74	0.65	0.14	0.24
75	0.19	-0.14	-0.05
76	0.31	-0.29	-0.31
77	0.38	-0.29	-0.11
78	0.46	0.14	0.09
79	0.58	0.00	0.24
80	0.38	0.00	-0.08
81	0.12	0.14	0.17
82	0.54	0.29	0.25
83	0.46	0.29	0.38
84	0.54	0.43	0.42
85	0.54	0.57	0.51
86	0.69	0.43	0.48
87	0.65	0.14	0.26
88	0.46	0.71	0.61
89	0.50	0.29	0.28
90	0.54	0.43	0.42
91	0.58	0.00	0.02
92	0.23	0.29	0.28
93	0.46	0.43	0.33
94	0.23	0.00	0.08
95	0.19	0.00	-0.01
96	0.50	0.57	0.44
97	0.46	0.29	0.25
98	0.35	0.71	0.65
99	0.27	0.14	0.18
100	0.23	0.00	0.04

TABLE 6

Item Analysis of the Item Bank of Questions for the Instructional Area of Agribusiness Management

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
1	0.79	0.33	0.27
2	0.38	0.50	0.37
3	0.54	0.50	0.28
4	0.58	0.67	0.52
5	0.33	0.50	0.44
6	0.50	0.50	0.26
7	0.29	0.50	0.27
8	0.63	-0.17	-0.16
9	0.63	0.17	0.16
10	0.50	0.17	0.06
11	0.63	0.00	0.10
12	0.71	0.00	-0.05
13	0.29	0.50	0.41
14	0.25	0.00	0.11
15	0.38	0.17	0.26
16	0.33	0.50	0.35
17	0.79	0.50	0.36
18	0.92	0.00	0.20
19	0.92	0.00	0.14
20	0.79	0.33	0.48
21	0.54	0.50	0.50
22	0.58	0.33	0.28
23	0.42	0.00	0.17
24	0.42	0.17	0.16
25	0.46	0.33	0.40
26	0.21	0.33	0.21
27	0.29	0.33	0.26
28	-0.17	-0.17	0.00
29	0.29	0.33	0.46
30	0.21	0.00	0.04
31	0.43	0.83	0.58
32	0.50	0.67	0.47
33	0.63	-0.17	
34	0.29	0.17	0.22
35	0.67	0.33	0.28

TABLE 6 (CONTINUED)

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
36	0.17	-0.17	-0.27
37	0.38	0.33	0.19
38	0.54	0.00	-0.09
39	0.17	-0.17	-0.19
40	0.63	0.50	0.43
41	0.29	0.17	0.15
42	0.42	0.17	-0.02
43	0.17	0.50	0.42
44	0.54	0.33	0.05
45	0.58	0.50	0.33
46	0.58	0.50	0.28
47	0.67	0.17	0.13
48	0.29	-0.17	-0.15
49	0.33	0.67	0.48
50	0.33	0.17	0.23

TABLE 7

Item Analysis of the Item Bank of Questions for the Instructional Area of Soil Science

Item Bank Number	Item Difficulty	Item Discrimination	Item Point Biserial Correlation
1	0.39	-0.11	-0.21
2	0.58	0.11	0.08
3	0.44	-0.22	0.00
4	0.14	0.33	0.33
5	0.78	0.44	0.33
6	0.78	0.44	0.44
7	0.69	0.00	0.15
8	0.44	0.00	0.01
9	0.64	0.44	0.32
10	0.67	0.56	0.40
11	0.36	-0.11	-0.02
12	0.42	0.22	0.20
13	0.36	0.67	0.53
14	0.31	0.56	0.47
15	0.56	0.44	0.32
16	0.75	0.44	0.40
17	0.58	0.56	0.43
18	0.47	0.00	-0.01
19	0.50	0.22	0.15
20	0.69	0.22	0.31
21	0.75	0.33	0.36
22	0.56	0.22	0.16
23	0.53	0.11	0.23
24	0.67	0.22	0.33
25	0.72	0.22	0.38
26	0.72	0.44	0.48
27	0.56	0.44	0.42
28	0.28	0.33	0.29
29	0.50	0.11	0.17
30	0.36	0.22	0.18
31	0.31	0.33	0.28
32	0.47	0.11	0.01
33	0.47	-0.11	-0.02
34	0.39	0.11	0.17
35	0.39	0.00	0.01

TABLE 7 (CONTINUED)

Item Bank Number	Item Difficulty	Iem Discrimination	Item Point Biserial Correlation
36	0.33	0.33	0.34
37	0.53	0.44	0.27
38	0.17	-0.22	-0.21
39	0.33	0.22	0.16
40	0.36	0.33	0.26
41	0.14	-0.22	-0.14
42	0.83	0.56	0.57
43	0.56	0.33	0.32
44	0.78	0.44	0.37
45	0.61	0.67	0.44
46	0.42	0.22	0.20
47	0.61	0.78	0.61
48	0.36	0.33	0.29
49	0.44	-0.11	-0.13
50	0.61	0.00	0.05
51	0.58	0.44	0.30
52	0.56	0.56	0.43
53	0.58	0.56	0.48
54	0.64	0.13	0.28
55	0.42	0.11	-0.05
56	0.47	0.33	0.19
57	0.47	0.56	0.48
58	0.44	0.56	0.28
59	0.39	0.67	0.41
60	0.47	0.89	0.58
61	0.44	0.67	0.49
62	0.31	0.44	0.21
63	0.64	0.33	0.25
64	0.64	0.33	0.25
65	0.50	0.44	0.23
66	0.44	0.22	0.24

Recommendations

Based upon the results obtained from this activity, the following recommendations appear to be in order:

1. The student assessment tests can be used by teachers who are interested in determining how well their students are achieving the competencies that are prescribed for the Fundamentals of Agribusiness and Natural Resources curriculum. This data should provide a reliable method of determining which instructional areas need further development or improvement.

2. It is recommended that the criteria, specified in the results section of this document, be used to select items for testing purposes.

3. Research be initiated to assess program effectiveness and student achievement in the Fundamentals of Agribusiness and Natural Resources curriculum.

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APPENDIX A

Competencies for the Instructional Areas Included in the Fundamentals of Agribusiness and Natural Resources Occupations Programs

Instructional Area Competencies in Fundamentals of Agribusiness and Natural Resources

Animal Science

1. The student will be able to identify the different breeds of beef cattle.

2. The student will be able to define the terminology related to the beef industry.

3. The student will be able to identify the different breeds of dairy cattle.

4. The student will be able to define common terminology associated with the dairy industry.

5. The student will be able to identify the major breeds of swine.

6. The student will be able to define common terminology related to the swine industry.

7. The student will be able to identify the major breeds of sheep.

8. The student will be able to define terminology associated with the sheep industry.

9. The student will be able to identify the major breeds of horses.

10. The student will be able to identify common terminology associated with the horse industry.

11. The student will be able to compare the different breeding practices.

12. The student will be able to identify the major breeds of poultry.

13. The student will be able to define terminology associated with the poultry industry.

14. The student will be able to identify parts of the female and male reproductive systems.

15. The student will be able to describe the use or importance of artificial insemination.

16. The student will be able to identify the different types of meat.

17. The student will be able to describe meat marketing.

18. The student will be able to identify the steps involved in processing a meat-type animal.

19. The student will be able to list possible careers in animal science.

Agricultural Mechanics

1. The student will be able to utilize safety practices in the shop.

2. The student will be able to identify basic tools.

3. The student will be able to use basic tools and equipment.

4. The student will be able to demonstrate how to sharpen common shop tools.

5. The student will become familiar with basic oxyacetylene welding equipment.

6. The student will be able to turn on an oxyacetylene welder.

7. The student will learn how to run a bead and cut.

8. The student will learn how to shut off torches.

9. The student will become familiar with basic arc welding equipment.

10. The student will learn how to run a bead.

11. The student will be able to describe maintenance of a farm tractor.

12. The student will learn proper operation of a farm tractor.

13. The student will learn to identify major systems of a small gasoline engine.

14. The student will be able to describe the basic fundamentals of how a small engine operates.

15. The student will be able to describe preventative maintenance of small gasoline engine.

16. The student will be able to identify tools used to service small engines.

Leadership

1. The student will be able to determine what the FFA represents.

2. The student will be able to explain the history of the FFA.

3. The student will be able to understand the different degrees of membership.

4. The student will be able to determine types of programs offered by the FFA.

5. The student will learn elementary parliamentary procedure practices.

Plant Science

1. The student will be able to classify plants botanically.

2. The student will be able to identify plants by their life cycle.

3. The student will be able to identify plants by their use.

4. The student will be able to determine the form and basic structure of a plant.

5. The student will be able to determine the parts of a plant.

6. The student will be able to identify and describe growth regulators.

7. The student will be able to identify plant nutrients.

8. The student will be able to describe plant reproduction.

9. The student will be able to describe the germination of a seed.

10. The student will be able to describe the methods associated with planting and transplanting.

11. The student will be able to list and identify major plant

pests.

12. The student will learn what methods to use to control plant pests.
13. The student will be able to list possible careers in plant science and forestry.
14. The student will learn the importance of forestry.
15. The student will be able to survey forest area types in the U.S.
16. The student will become aware of the forest agencies, organizations, and branches.
17. The student will be able to recognize 30 common forest trees in Florida.
18. The student will be able to identify areas involved in the forestry contest.

Agribusiness Management

1. The student will be able to identify an Agribusiness.
2. The student will be able to analyze an Agribusiness.
3. The student will be able to determine the properties of good money management.
4. The student will be able to determine the different types of agribusiness business structures.
5. The student will demonstrate the ability to keep accurate business records.
6. The student will develop knowledge of Agribusiness careers.
7. The student will be able to determine supervised occupational work experiences.

Soil Science

1. The student will be able to describe how soil is formed.
2. The student will be able to describe different soil colors.

3. The student will be able to identify the components of soil.
4. The student will be able to define components of productive soil.
5. The student will be able to explain the need for conserving natural resources.
6. The student will be able to identify agencies involved in conservation of natural resources.
7. The student will be able to describe soil classification.
8. The student will be able to identify methods used in determining soil nutrient deficiencis.
9. The student will be able to identify major fertilizer elements.
10. The student will be able to develop land and soil records.
11. The student will be able to identify major careers in soil science.

APPENDIX B

TEST ITEMS FOR INSTRUCTIONAL AREA OF ANIMAL SCIENCE

Test Items for Animal Science

Competency:

The student will be able to identify the different breeds of beef cattle.

1. The breed of beef cattle identified by folds of loose skin, droopy ears and a humped back is the:

   a. Angus
   b. Hereford
   c. American Brahman
   d. Shorthorn

2. The short, compact breed of cattle with black hair and usually no horns is the:

   a. Angus
   b. Brahman
   c. Hereford
   d. Santa Gertrudis

3. A common breed of beef cattle, red in color with a white face is the:

   a. Angus
   b. Hereford
   c. Brahman
   d. Shorthorn

4. A breed of cattle, generally red or roan in color, larger in size than any other British breed is the:
   a. Angus
   b. Shorthorn
   c. Santa Gertrudis
   d. Herford

5. The breed of cattle known for heat tolerance, does well in warm climates:

   a. Hereford
   b. Angus
   c. Brahman
   d. Shorthorn

6. The breed of cattle known for high carcass quality and good mothering ability is the:

   a. Hereford
   b. Angus
   c. Brahman
   d. Shorthorn

7. The beef cattle breed known for good milking, rapid growth and large size is the:

   a. Hereford
   b. Angus
   c. Shorthorn
   d. Brangus

8. The dark colored, polled, cross-bred cattle that combines heat tolerance with good carcass quality is the:

   a. Santa Gertrudis
   b. Polled Hereford
   c. Brangus
   d. Beefmaster

9. The breed of beef cattle imported from France known for large size, rapid growth and white color is the:

   a. Devon
   b. Galloway
   c. Charolais
   d. Santa Gertrudis

10. The breed of beef cattle, imported from Scotland that is hornless and has long curly hair, usually black is the:

   a. Devon
   b. Galloway
   c. Charolais
   d. Scotch Highlands

11. The breed of beef cattle, imported from Scotland, recognized by long, shaggy hair and long horns is the:

   a. Devon
   b. Galloway
   c. Charolais
   d. Scotch Highlands

12. The breed of beef cattle imported from India recognized by humped back, loose folds of leathery skin is the:

a. Devon
b. Brahman
c. Angus
d. Red Poll

Competency:

The student will be able to define the terminology related to the beef industry.

13. A trait that is approximately 45% heritable and can be used to predict an animals size at maturity is the:

a. Weaning weight
b. Birth weight
c. Average daily gain
d. Market weight

14. The characteristic that determines the value of a beef animal at slaughter time is:

a. Weaning weight
b. Birth weight
c. Average daily gain
d. Market weight

15. The beef animal's efficiency in utilizing feed for growth relates to the:

a. Color
b. Slaughter grade
c. Average daily gain
d. Cross breeding

16. Mating an animal from one breed to one of another breed for the purpose of improving the vigor or productivity by the offspring is called:

a. Inbreeding
b. Selection
c. Cross breeding
d. Artificial breeding

17. A breed of cattle that can be used for either beef or milk production is called:

a. Hybrid
b. Cross breed
c. Exotic breed
d. Dual-purpose breed

18. A male bovine that has been castrated and is raised for beef production is called a:

a. Heifer
b. Steer
c. Stocker
d. Polled

Competency:

The student will be able to identify the different breeds of dairy cattle.

19. The breed of dairy cattle recognized by its large size and black and white coloration is the:

a. Jersey
b. Guernsey
c. Holstein
d. Shorthorn

20. The breed of dairy cattle, generally brown or reddish in color with white markings is the:

a. Jersey
b. Guernsey
c. Holstein
d. Shorthorn

21. The dairy cattle breed recognized by relatively small size, usually solid colored, light brown, yellow or tan is the:

a. Jersey
b. Guernsey
c. Ayrshire
d. Brown Swiss

22. The dairy breed with long, upright horns, red in color with white markings is the:

a. Jersey
b. Ayrshire
c. Brown Swiss
d. Guernsey

23. The dairy breed noted for large size, solid color ranging from light to dark brown is the:

a. Jersey
b. Brown Swiss
c. Ayrshire
d. Shorthorn

24. The dual purpose breed recognized by deep red and roan color and large size is the:

a. Aryshire
b. Brown Swiss
c. Shorthorn
d. Guernsey

25. The dairy breed known for efficient grazing on good pasture, gentle disposition, and very high milk production is the:

a. Holstein
b. Guernsey
c. Jersey
d. Brown Swiss

26. The dairy breed known for high quality, golden colored milk is the:

a. Holstein
b. Guernsey
c. Brown Swiss
d. Shorthorn

27. The dairy breed known for excellent grazing on poor pastures and production of milk that is very high in butterfat and solids is the:

a. Holstein
b. Jersey
c. Guernsey
d. Ayrshire

28. The dairy breed known for ruggedness and grazing ability, but are sometimes nervous and hard to manage is the:

a. Holstein
b. Jersey
c. Guernsey
d. Ayrshire

Competency:

The student will be able to define common terminology associated with the dairy industry.

29. The average dairy in Florida has approximately how many cows?

a. 10-20
b. 30-60
c. 100-300
d. 400-500

30. Average yearly milk production for a Florida dairy cow is approximately how many pounds?

[illegible] 2,000 lbs.
b. 5,000 lbs.
c. 10,000 lbs.
d. 20,000 lbs.

31. In relation to other states, where does Florida rank in dairy production?

a. 1st
b. 5th
c. 15th
d. 45th

32. The Florida dairy industry produces milk for:

a. Local consumption
b. Cheese for export to other states
c. Butter for export to other states
d. Milk for Russia

33. Florida's primary economic benefit from the dairy industry is:

    a. The export of cheese
    b. Not having to import milk
    c. The sale of manure
    d. The dairy by-products used in feeding hogs

34. The dairy product formed when milk proteins (mainly casein) are caused to curdle by lactic acid forming bacteria is:

    a. Skim milk
    b. Cheese
    c. Sour cream
    d. Ice cream

35. Milk which contains no fat at all is called:

    a. Skim milk
    b. Buttermilk
    c. 2% milk
    d. Dry milk

36. Milk that is "cultured" with lactic acid forming bacteria is called:

    a. Skim milk
    b. Buttermilk
    c. 2% milk
    d. Fortified milk

37. The dairy product made exclusively from the fat portion of milk is called:

    a. Cottage cheese
    b. Butter
    c. Whey
    d. Yogurt

38. Low-fat cheese curdled from skim milk is called:

    a. Cheddar
    b. Blue cheese
    c. Cottage cheese
    d. Processed cheese

39. The liquid portion of milk that remains after curdling is the:

a. Cream
b. Whey
c. Curds
d. Skim milk

40. One common way of describing the quality of milk is by:

a. Sugar content
b. Weight
c. Butterfat content
d. Whey content

41. The Babcock test is used to determine:

a. Protein content
b. Butterfat content
c. Vitamin content
d. Boiling point

42. A cow's mammary glands are collectively called the:

a. Teat
b. Udder
c. Alveolus
d. Cistern

43. A cow's udder is distinctly divided into how many segments?

a. 2
b. 3
c. 4
d. 6

44. The milk-secreting units within the udder are called:

a. Alveoli
b. Cisterns
c. Teats
d. Ducts

45. After milk is "let down" it is stored in the:

a. Ducts
b. Gland cistern and teat cistern
c. Sphincter
d. Udder

46. When a cow is milked, the milk comes out through the:

a. Cistern
b. Ducts
c. Lumen
d. Teats

Competency:

The student will be able to identify the major breeds of swine.

47. The breed of swine recognized by its large size and solid red color is the:

a. Hampshire
b. Yorkshire
c. Poland China
d. Duroc

48. The breed of swine that is black, with six white points (four feet, tip of tail and tip of nose) and drooping ears is the:

a. Hampshire
b. Yorkshire
c. Poland China
d. Duroc

49. The breed of swine recognized by a white band completely encircling the body including the front shoulders, legs and feet is the:

a. Hampshire
b. Yorkshire
c. Hereford
d. Berkshire

50. The breed of swine that is black with six white points, upturned nose and erect ears is the:

a. Hampshire
b. Yorkshire
c. Hereford
d. Berkshire

51. The breed of swine that is solid white in color and can be recognized by its partially drooping ears is the:

a. Hampshire
b. Landrace
c. Chester White
d. Yorkshire

52. The breed of swine that can be recognized by its color with white face, chest and feet is the:

a. Hampshire
b. Hereford
c. Landrace
d. Yorkshire

53. The breed of swine that is solid white in color, medium size with erect ears is the:

a. Yorkshire
b. Hereford
c. Duroc
d. American Landrace

54. The breed of swine recognized by long body, flat back and very large ears and is white in color is the:

a. Yorkshire
b. Hereford
c. Duroc
d. American Landrace

55. The breed of swine known for being very prolific, very large in size and for good mothering ability is the:

a. Hereford
b. Duroc
c. Hampshire
d. Chester White

56. Which of the following breeds of swine originated in the U.S., is known for early maturing, quiet disposition and excellent carcasses?

a. Poland China
b. Hampshire
c. Yorkshire
d. Chester White

57. Which of the following breeds of swine is popular for its striking appearance, adaptability and grazing ability, and high quality and lean carcass?

a. Hampshire
b. Landrace
c. Duroc
d. Yorkshire

Competency:

The student will be able to define common terminology related to the swine industry.

58. When a sow gives birth to a litter of pigs it is called:

a. Weaning
b. Farrowing
c. Creeping
d. Littering

59. A group of baby pigs, born from the same sow in the same pregnancy is called a:

a. Farrow
b. Litter
c. Tribe
d. Gaggle

60. An average sized litter has approximately how many pigs?

a. 1 - 3
b. 4 - 6
c. 7 - 9
d. 11 - 16

61. A female hog that has not yet given birth is called a:

a. Sow
b. Barrow
c. Gilt
d. Swine

62. A female hog that has given birth to at least one litter of pigs is called a:

a. Sow
b. Barrow
c. Gilt
d. Boar

63. A mature male hog used for breeding purposes is called a:

a. Sow
b. Barrow
c. Boar
d. Gilt

64. A slaughter barrow or gilt with a minimum of finish, high quality cuts of pork and at least 50% of its weight in primal lean cuts would be graded:

a. U.S. No. 1
b. U.S. No. 2
c. U.S. No. 3
d. Medium

65. A slaughter hog that is slightly fat (backfat is 1.6-1.9 in) with 47-50% of its weight in primal lean cuts would be graded:

a. U.S. No. 1
b. U.S. No. 2
c. Medium
d. Cull

66. A slaughter hog with backfat in excess of 1.9 inches and a 47% yield in primal cuts would be graded:

a. U.S. No. 1
b. U.S. No. 2
c. U.S. No. 3
d. Cull

67. A slaughter hog that is slightly underfinished with a poorly marbled carcass, and backfat 1.0 to 1.3 inches thick would be graded:

a. U.S. No. 2
b. U.S. No. 3
c. Medium
d. Cull

68. A slaughter hog that is decidedly underfinished with backfat of .9 to 1.2 inches thick would be graded:

a. U.S. No. 2
b. U.S. No. 3
c. Medium
d. Cull

Competency:

The student will be able to identify the major breeds of sheep.

69. "Fine wool" sheep breed, known for strong flocking instinct. Face and legs are white, most rams have horns.

a. Hampshire
b. Rabouillet
c. Merino
d. Dorset

70. "Dual purpose" breed of sheep featuring fine wool and good carcass quality. White face and legs. Most rams have large spiral horns.

a. Hampshire
b. Rambouillet
c. Merino
d. Dorset

71. Medium wool breed with dark brown face, ears and legs. Known for large size and rapid rate of growth.

a. Hampshire
b. Rambouillet
c. Merino
d. Shropshire

72. Breed of sheep used for both wool and meat production and recognized by thick wool covering over the face and legs.

a. Hampshire
b. Shropshire
c. Suffolk
d. Oxford

73. Breed of sheep raised primarily for meat production. Recognized by its distinctive black face and legs.

a. Hampshire
b. Shropshire
c. Suffolk
d. Oxford

Competency:

The student will be able to define terminology associated with the sheep industry.

74. A mature, female sheep is called a:

a. Nanny
b. Ewe
c. Lamb
d. Wether

75. A class of market sheep less than one year of age is/are called:

a. Feeder sheep
b. Lamb
c. Wether
d. Slaughter sheep

76. Sheep raised primarily for wool production are:

a. Angora
b. Fur animal
c. Wether
d. Feeder sheep

77. Blackface sheep are usually raised for what purpose?

a. Fur animal
b. Milking
c. Meat animal

Competency:

The student will be able to identify the major breeds of horses.

78. The oldest known breed of horse, recognized by its dark skin and beautiful head. Known for docility, endurance and ease of going, it is a popular saddle horse.

a. Morgan
b. Quarter horse
c. Arabian
d. Thoroughbred

79. Breed of horse known for its long, refined body conformation, smooth muscling and running speed. Used for racing as well as other purposes.

a. Morgan
b. Quarter horse
c. Arabian
d. Thoroughbred

80. Well muscled, powerfully built breed of horse with large jaw and small ears. Known for its versatility and speed over a short distance. Good stock horse.

a. Arabian
b. Thoroughbred
c. Quarter horse
d. Appaloosa

81. Breed of horse recognized by various spotted color patterns. Popular as a stock horse or western performance horse.

a. Arabian
b. Palomino
c. Quarter horse
d. Appaloosa

82. Breed of horse that originated in the United States. Used primarily for harness racing.

a. Appaloosa
b. Quarter horse
c. Standardbred
d. American Saddle horse

83. Breed of horse originating in Kentucky area. Known as a quality riding horse.

a. Morgan
b. American Saddle horse
c. Standardbred
d. Quarter horse

84. An American horse breed of mixed descent. Developed primarily for the execution of one particular gait. Used as a pleasure and show horse.

a. American Saddle horse
b. Standardbred
c. Tennessee Walking horse
d. Morgan

85. A "Draft Horse" breed:

a. Morgan
b. Percheron
c. Standardbred
d. Quarter horse

86. Draft horses are bred for:

a. Racing
b. Strength
c. Riding
d. Sheep herding

Competency:

The student will be able to identify common terminology associated with the horse industry.

87. A male horse that has been castrated is called a:

a. Stallion
b. Mare
c. Mule
d. Gelding

88. A mature, female horse is called a:

a. Filly
b. Mare
c. Gelding
d. Foal

89. A male horse used for breeding purposes is called a:

a. Stallion
b. Filly
c. Mare
d. Gelding

90. A newly born horse is called a:

a. Filly
b. Gelding
c. Foal
d. Pony

91. An immature female horse is called a:

a. Filly
b. Foal
c. Gelding
d. Mare

Competency:

The student will be able to compare the different breeding practices.

92. What is a horse with "papers" indicating direct lineage from parents of the same breed called?

a. Thoroughbred
b. Registered purebred
c. Gelding
d. Purebred

93. A horse with direct lineage from parents of the same breed, but no papers to prove it, is a (an):

a. Thoroughbred
b. Gelding
c. Unregistered purebred
d. Crossbred

94. A common or native horse of unknown breeding is considered a:

a. Crossbred
b. Scrub horse
c. Grade animal
d. Gelding

95. A horse that is the offspring of parents of two different breeds is a:

a. Grade animal
b. Crossbred
c. Halt sibling
d. Foal

96. A horse whose lineage may include ancestors of many breeds is called a:

- a. Scrub or mixed animal
- b. Quarter horse
- c. Foal
- d. Crossbred

Competency:

The student will be able to identify the major breeds of poultry.

97. The chicken breed most commonly used for egg production is the:

- a. Rhode Island
- b. Plymouth Rock
- c. Leghorn
- d. New Hampshire

98. The primary use of Plymouth Rock chickens is for:

- a. Eggs
- b. Dual purpose - eggs and meat
- c. Show birds
- d. Cock fighting

99. Most meat type chickens in the U.S. come from which of the following crosses?

- a. Rhode Island male X Leghorn female
- b. Rhode Island female X New Hampshire male
- c. White Cornish male X White Rock female
- d. Plymouth Rock male X Leghorn female

100. The dual purpose breed of chicken recognized by its red color is the:

- a. New Hampshire
- b. Rhode Island
- c. Leghorn
- d. Plymouth Rock

101. The dual purpose breed of chicken used in cross-breeding for broiler production that is white in color is the:

- a. New Hampshire
- b. Rhode Island
- c. Leghorn
- d. Plymouth Rock

Competency:

The student will be able to define terminology associated with the poultry industry.

102. A chicken that is kept primarily for egg production is called a:

a. Pullet
b. Layer
c. Broiler
d. Capon

103. A chicken that is raised for meat production is called a:

a. Pullet
b. Broiler
c. Rooster
d. Leghorn

104. A female chicken that has not yet laid any eggs is called a:

a. Cornish hen
b. Capon
c. Broiler
d. Pullet

Competency:

The student will be able to identify parts of the female and male reproductive systems.

Directions: Use the diagrams of the Female Reproductive System to answer the following questions. Identify the body part corresponding to the numbers on the diagrams.

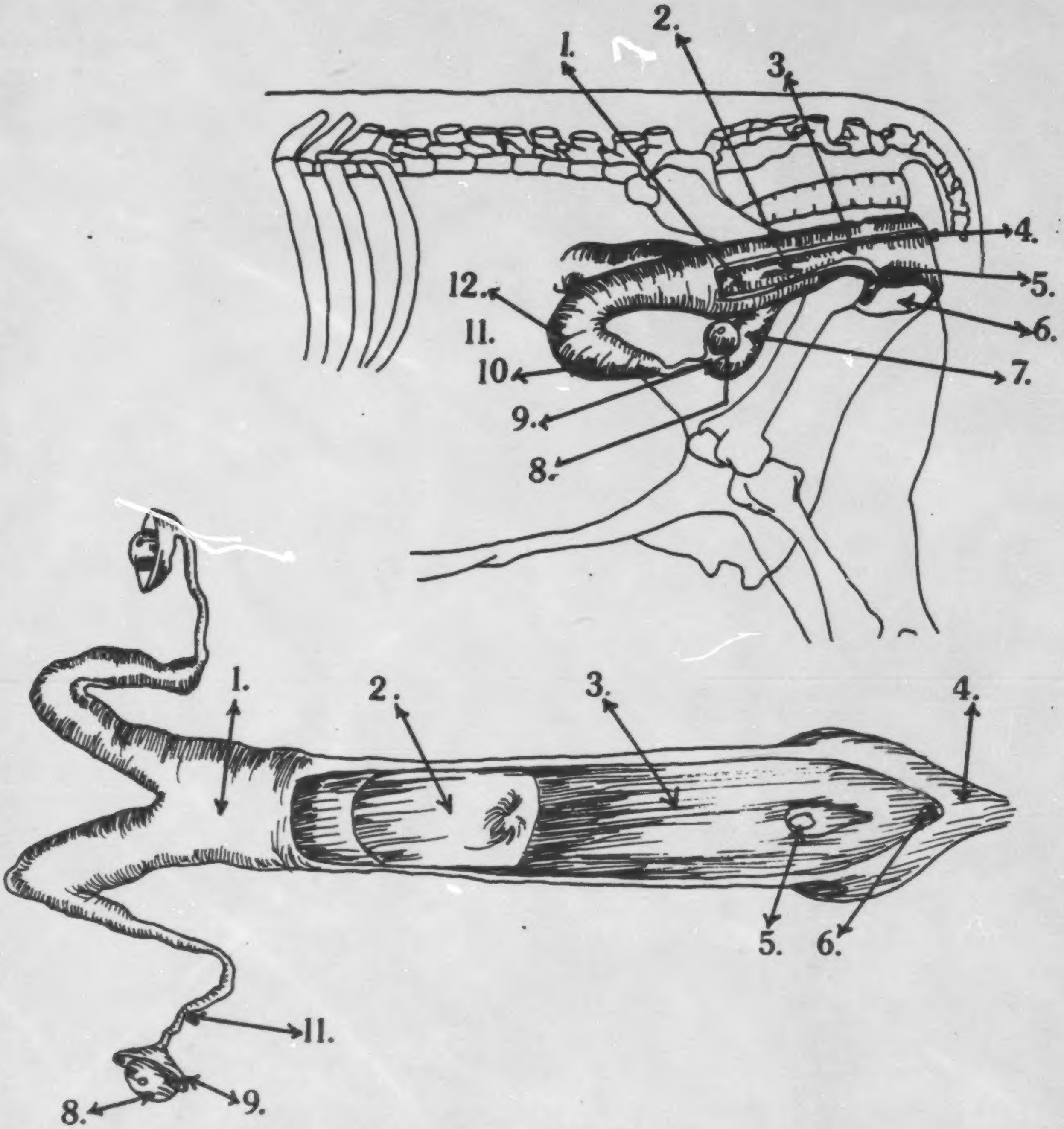
105. #1

a. Ovary
b. Uterus
c. Urethra
d. Vulva

FEMALE REPRODUCTIVE SYSTEM

106. #2

  a. Cervix
  b. Uterus
  c. Vulva
  d. Fallopian tube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107. #4

a. Urethra
b. Cervix
c. Uterus
d. Vulva

108. #8

a. Uterus
b. Cervix
c. Ovary
d. Uterine horns

109. #12

a. Urethra
b. Cervix
c. Fallopian tube
d. Uterine horns

Use the diagram of the Male Reproductive System to answer the following questions.

Identify the body part corresponding to the numbers on the diagram.

110. #1

a. Vas deferens
b. Seminal vesicles
c. Epididymis
d. Prostate gland

111. #3

a. Testicle
b. Urethra
c. Bladder
d. Urether

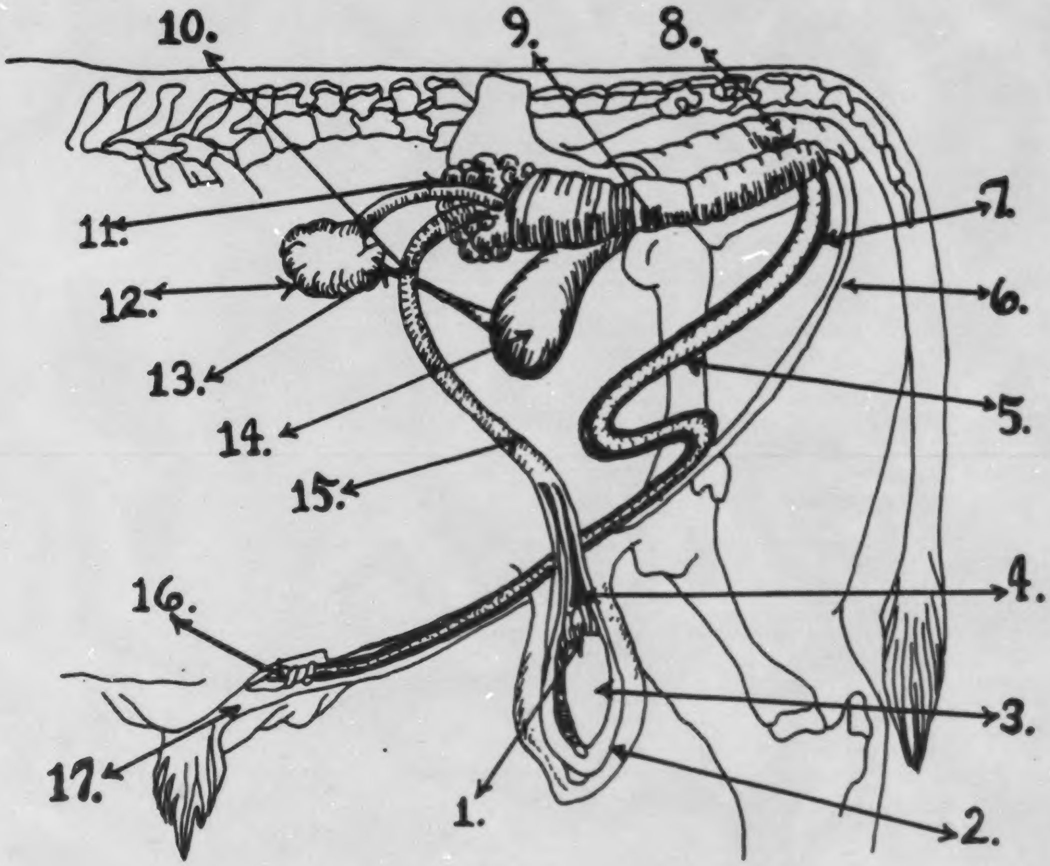
112. #11

a. Vas deferens
b. Seminal vesicles
c. Epididymis
d. Prostate gland

113. #7

a. Urethra
b. Prostate gland
c. Vas deferens
d. Seminal vesicles

MALE REPRODUCTIVE SYSTEM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114. #15

a. Urethra
b. Spermatic cord
c. Ejaculatory duct
d. Vas deferens

Competency:

The student will be able to describe the use or importance of artificial insemination.

115. Semen for artificial insemination is stored in:

a. Liquid oxygen
b. Liquid nitrogen
c. Ice water
d. Carbon dioxide

116. The tool that is used to place the semen within the cow's uterus is the:

a. Catheter
b. Syringe
c. Insemination tube
d. Ampule

117. When performing artificial insemination the hand is placed in the:

a. Rectum
b. Cervix
c. Oviduct
d. Vulva

118. The insemination tube is inserted into the vagina and guided to the:

a. Urethra
b. Oviduct
c. Cervix
d. Ovary

119. For successful fertilization, the semen must reach the:

a. Urethra
b. Oviduct
c. Uterus
d. Ovary

120. A well known outfit that provides artificial insemination services is:

a. American Breeders Service (ABS)
b. Artificial Insemination Cooperative (AIC)
c. Insemination Unliminated (IU)
d. Quick-Serve, Inc.

Competency:

The student will be able to identify the different types of meat.

121. Which of the following cuts of beef is a wholesale cut?

a. Round
b. Sirloin Steak
c. Rump Roast
d. Top Round

122. Which of the following cuts of beef is a retail cut?

a. Chuck
b. Round
c. Rump Roast
d. Loin

From the diagram of beef carcass, identify the major wholesale cuts of beef.

123. Cut #1.

a. Round
b. Rump
c. Flank
d. Chuck

124. Cut #3.

a. Round
b. Loin End
c. Short Loin
d. Rib

125. Cut #4.

- a. Round
- b. Loin End
- c. Short Loin
- d. Rib

126. Cut #6.

- a. Flank
- b. Chuck
- c. Round
- d. Rib

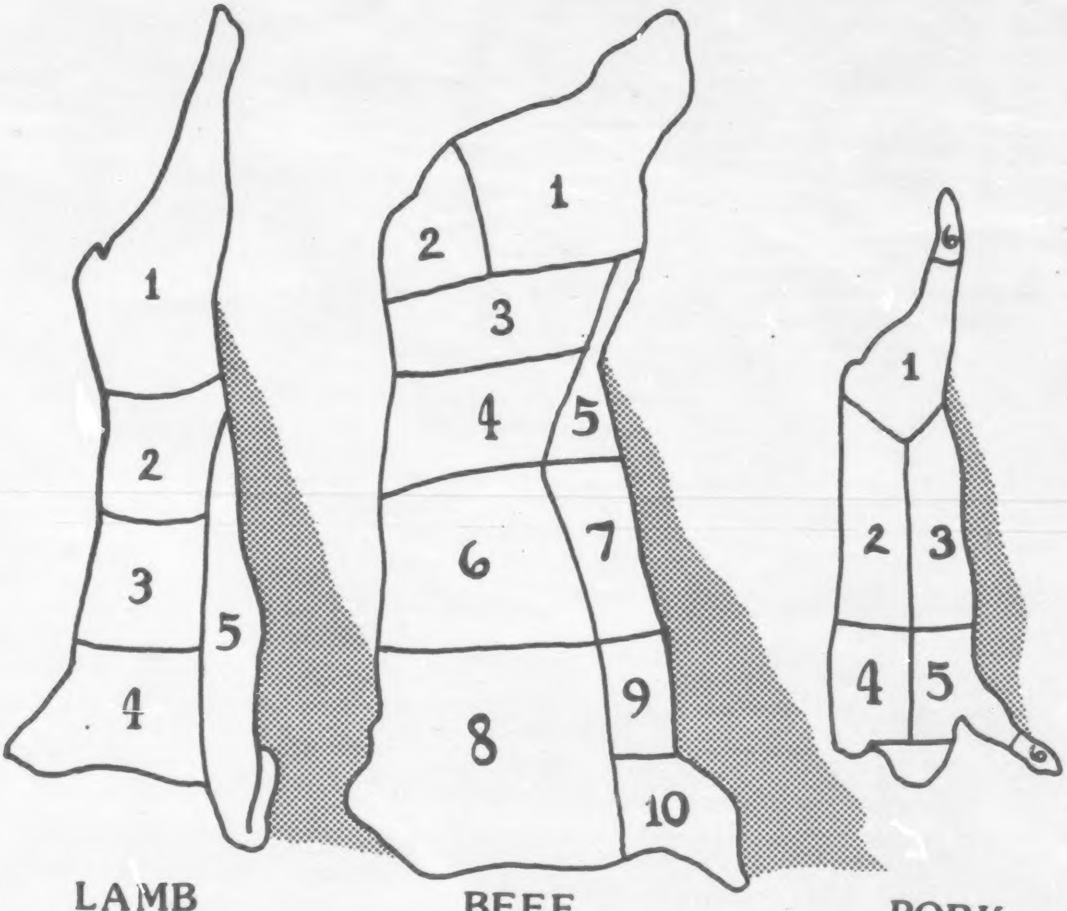
127. Cut #9.

- a. Rib
- b. Brisket
- c. Plate
- d. Loin End

128. Cut #8

- a. Chuck
- b. Rib
- c. Brisket
- d. Plate

DIAGRAMS OF LAMB, BEEF, AND PORK CARCASSES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4
5
6

LAMB BEEF PORK

From the diagram of a lamb carcass, identify the major wholesale cuts of lamb.

129. Cut #1.

a. Loin
b. Leg
c. Shoulder
d. Rack

130. Cut #2.

a. Shoulder
b. Breast
c. Loin
d. Rack

131. Cut #4.

a. Loin
b. Rack
c. Leg
d. Shoulder

132. Cut #5.

a. Loin
b. Breast
c. Shoulder
d. Rack

From the diagram of a hog carcass, identify the major cuts of pork.

133. Cut #1.

a. Ham
b. Loin
c. Boston Butt
d. Bacon

134. Cut #2.

a. Ham
b. Loin
c. Boston Butt
d. Bacon

135. Cut #3.

   a. Loin
   b. Bacon
   c. Boston Butt
   d. Picnic Shoulder

136. Cut #4.

   a. Ham
   b. Picnic Shoulder
   c. Loin
   d. Boston Butt

Competency:

The student will be able to describe meat marketing.

137. The U.S. City where the most livestock is marketed.

   a. Omaha
   b. Milwaukee
   c. Kansas City
   d. Atlanta

138. A livestock trading center where livestock are assembled at a single location in large numbers to be sold on a private treaty basis is called a:

   a. Livestock Auction Market
   b. Country Market
   c. Terminal Market
   d. Meat Packing House

139. The transportation mode that carries the most livestock to market in the U.S. is:

   a. Rail
   b. Truck
   c. Ship
   d. Air

140. A livestock trading center where animals are sold by public bidding to the buyer who offers the highest price per hundred weight or per head is called a:

   a. Livestock Auction Market
   b. Country Market
   c. Terminal Market
   d. Meat Packing House

Competency:

The student will be able to identify the steps involved in processing a meat-type animal.

141. The first step after slaughtering a hog is:

   a. Scalding
   b. Scraping
   c. Singeing
   d. Eviscerating

142. The purpose for scalding the hog carcass is to:

   a. Ease evisceration
   b. Loosen the skin
   c. Loosen hair
   d. Soften bones

143. The last step before a beef carcass is put in the cooler for aging is:

   a. Skinning
   b. Eviscerating
   c. Washing and drying
   d. Splitting

144. The step after a slaughter animal is stunned is:

   a. Eviscerating
   b. Skinning
   c. Bleeding
   d. Dehairing

145. The "picnic" cut of pork comes from the:

   a. Hind leg
   b. Hind haunch
   c. Belly
   d. Front shoulder

146. The part of the pig from which bacon is cut is the:

   a. Back
   b. Belly
   c. Hind leg
   d. Front leg

147. The beef cut from which most steaks are taken is the:

- a. Loin
- b. Flank
- c. Brisket
- d. Shank

Competency:

The student will be able to list possible careers in Animal Science.

148. A graduate, with a college degree in dairy science could qualify for which of the following jobs?

- a. Dairy Fieldman
- b. Dairy Farm Management
- c. USDA Dairy Inspector
- d. All of the above

149. A research scientist in dairy science will usually need what type of degree?

- a. Bachelor of Science
- b. High School diploma
- c. Masters or Doctorate
- d. Associate degree

150. An important competency for someone working in the feed industry is:

- a. Knowledge of animal nutrition
- b. Skill in artificial insemination
- c. Ability to design new farm machines
- d. Skill in meats judging

151. Besides knowledge of animals, a livestock buyer needs training in:

- a. Meteorology
- b. Business and marketing
- c. Forest products
- d. Pasture and forage science

152. The degree needed to work as a county livestock agent is a:

a. High school diploma - vocational agriculture training
b. Bachelors or masters degree
c. Associate degree from vocational-technical school
d. Ph.D. in agriculture

153. Which of the following competencies is needed by the on-farm producer of livestock or animal products?

a. Knowledge of feeds and animal nutrition
b. Skills in handling animals
c. Knowledge of business and livestock marketing
d. All of the above

APPENDIX C

ANSWER KEY FOR ANIMAL SCIENCE TEST ITEMS

ANSWER KEY
ANIMAL SCIENCE

Test Item	Answer
1	C
2	A
3	B
4	B
5	C
6	B
7	C
8	C
9	C
10	B
11	D
12	B
13	B
14	D
15	C
16	C
17	D
18	B
19	C
20	B
21	A
22	B
23	B
24	C
25	A
26	B
27	B
28	D
29	C
30	C
31	C
32	A
33	B
34	B
35	A
36	B
37	B
38	C
39	B
40	C
41	B
42	B
43	C
44	A
45	B

ANSWER KEY
ANIMAL SCIENCE

Test Item	Answer
46	D
47	D
48	C
49	A
50	D
51	C
52	B
53	A
54	D
55	B
56	A
57	A
58	B
59	B
60	C
61	C
62	A
63	C
64	A
65	B
66	C
67	C
68	D
69	C
70	B
71	C
72	B
73	C
74	B
75	B
76	B
77	C
78	C
79	B
80	C
81	D
82	C
83	B
84	C
85	B
86	B
87	D
88	B
89	A
90	C

ANSWER KEY
ANIMAL SCIENCE

Test Item	Answer
91	A
92	B
93	C
94	C
95	B
96	A
97	C
98	B
99	C
100	B
101	D
102	B
103	B
104	D
105	B
106	A
107	D
108	C
109	D
110	C
111	A
112	B
113	A
114	D
115	B
116	C
117	A
118	C
119	C
120	A
121	A
122	C
123	A
124	B
125	C
126	B
127	A
128	B
129	B
130	C
131	D
132	B
133	A
134	B
135	B

ANSWER KEY
ANIMAL SCIENCE

Test Item	Answer
136	D
137	A
138	C
139	B
140	A
141	A
142	C
143	C
144	C
145	D
146	B
147	A
148	D
149	C
150	A
151	B
152	B
153	D

APPENDIX D

TEST ITEMS FOR INSTRUCTIONAL AREA OF AGRICULTURAL MECHANICS

TEST ITEMS FOR

AGRICULTURAL MECHANICS

Competency:

The student will be able to utilize safety practices in the shop.

1. Never arc weld in an area where the floor is:

   a. Cold
   b. Hot
   c. Dry
   d. Damp

2. To protect your eyes from being burned when arc welding, which of the following items should always be worn?

   a. Coveralls
   b. Leather gloves
   c. Headgear
   d. Glasses

3. If chemical spray material comes in contact with the body:

   a. Wash off contact area with water
   b. Wash off contact area with diesel fuel
   c. Wash off contact area with water and detergent
   d. Don't worry - it won't hurt

4. The type of fire extinguisher most appropriate for fighting an electrical fire is the:

   a. Soda-acid
   b. Foam
   c. Carbon tetrachloride
   d. Carbon dioxide

5. If someone enters the shop to visit while work is in progress, which of the following steps should be taken?

   a. Ask them to leave
   b. Check to see if your insurance is paid
   c. Warn them of possible dangers
   d. Provide them with safety goggles or glasses as you warn them of any hazards

6. The commonly recommended helmet lens to use when arc welding is:

   a. No. 7
   b. No. 10
   c. No. 18
   d. No. 3

7. The area used for arc welding should meet which of the following conditions?

   a. Well ventilated
   b. In a separate room of the shop
   c. Lined with asbestos
   d. B and C above

8. For safe use of a power saw which of the following procedures should be followed?

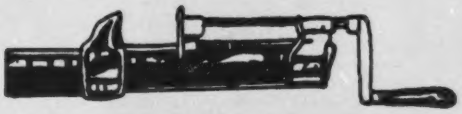
   a. Always wear eye protection
   b. Be sure saw is properly grounded
   c. Make sure blade guard is in place
   d. All of the above

Competency:

The student will be able to identify basic tools.

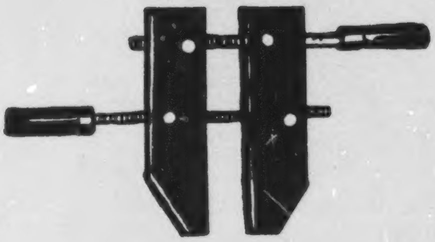
9. The tool illustrated is a:

   a. Hand screw
   b. Bar clamp
   c. "C" clamp
   d. Round File



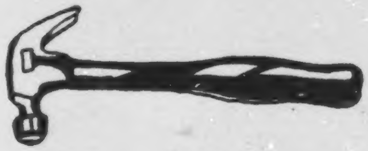
10. The tool illustrated is a:

   a. Hand screw
   b. Bar clamp
   c. "C" clamp
   d. Round file

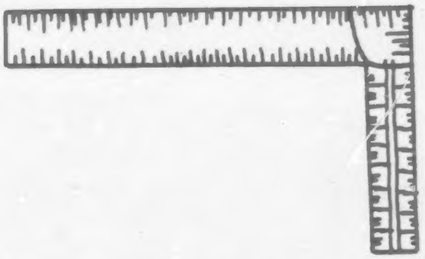


11. The tool illustrated is a:

   a. Ball pein hammer
   b. Curved claw hammer
   c. Sledge hammer
   d. Monkey wrench

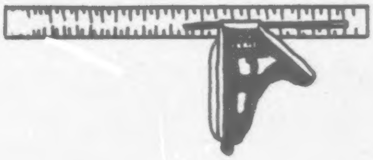


12. The tool illustrated is a:



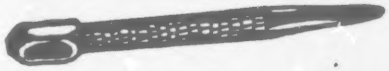
- a. Try square
- b. Combination square
- c. Carpenters square
- d. "T" Square

13 The tool illustrated is a:



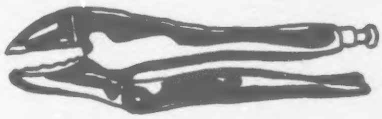
- a. Try square
- b. Combination square
- c. Carpenters square
- d. "T" Square

14. The tool illustrated is a:



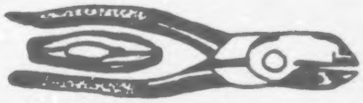
- a. Center punch
- b. Sheet metal punch
- c. Drill bit
- d. Nail set punch

15. The tool illustrated is a:



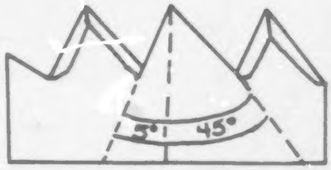
- a. Diagonal pliers
- b. Lineman pliers
- c. Vice grips
- d. Adjustable wrench

16. The tool illustrated is a:



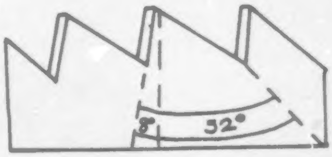
- a. Lineman or electricians pliers
- b. Diagonal pliers
- c. Combination pliers
- d. Level jawed wrench

17. The tool illustrated is a:



- a. Hand cross cut saw
- b. Hand rip saw
- c. Hack saw
- d. Jack plane

18. The tool illustrated is a:



- a. Hand cross cut saw
- b. hand rip saw
- c. Hack saw
- d. Jack plane

Competency:

The student will be able to use basic tools and equipment.

19. Which of the following are use(s) of the combination square?

    a. Level
    b. Straight edge
    c. Mitre square
    d. All of the above

20. The type of plane used for cutting across the grain on the ends of a piece of wood is the:

    a. Jack plane
    b. Smoothing plane
    c. Block plane
    d. Jump plane

21. The type of saw used to cut straight lines across the grain in wood is the:

    a. Crosscut saw
    b. Rip saw
    c. Compass saw
    d. Coping saw

22. Angle at which a crosscut saw should be held to the wood while cutting:

    a. 20°
    b. 45°
    c. 68°
    d. 90°

23. The type of saw used for cutting straight lines with the grain of wood is the:

    a. Crosscut saw
    b. Rip saw
    c. Compass saw
    d. Coping saw

24. What can a portable power saw be used for?

    a. Crosscutting only
    b. Ripping only
    c. Crosscutting and ripping
    d. None of the above

25. For heavy drilling jobs and best accuracy, which tool should be used?

   a. Drill press
   b. Portable power drill
   c. Hand drill
   d. Center punch

26. The tool used to form a flaring depression around the top of a hole to accept the head of a screw or bolt is the:

   a. Auger bit
   b. Twist drill
   c. Countersink
   d. Star drill

27. The tool used to drive a finishing nail beneath the surface or flush with the surface without damaging the wood is the:

   a. Solid punch
   b. Ball pein hammer
   c. Countersink
   d. Nail set

Competency:

The student will be able to demonstrate how to sharpen common shop tools.

28. Jointing, shaping teeth, setting, filing and side jointing are the steps for:

   a. Sharpening a hand saw
   b. Sharpening a chainsaw
   c. Fixing a pitchfork
   d. Sharpening an auger bit

29. Bending saw teeth in alternating directions is called:

   a. Filing
   b. Side jointing
   c. Shaping teeth
   d. Setting

30. When sharpening an auger bit what part should be filed?

    a. Inside and outside of the spurs
    b. Inside of the spurs only
    c. Outside of the spurs only
    d. Feed screw

31. How is a twist drill sharpened?

    a. Filing
    b. Whetting
    c. Grinding
    d. None of the above

32. The proper tool for sharpening hoes, spades, and shovels is the:

    a. Whetstone
    b. File
    c. Grinder
    d. Rasp

Competency:

The student will become familiar with basic oxyacetylene welding equipment?

33. The oxygen cylinder for oxyacetylene welding is painted what color?

    a. Black
    b. Green
    c. White
    d. Red

34. The acetylene cylinder is generally painted what color?

    a. Black
    b. Green
    c. White
    d. Red

35. Oil and grease should be kept from coming in contact with oxygen under pressure because:

    a. Poison gasses may form
    b. Could cause a mess in the shop
    c. Oil or grease could ignite
    d. Grease could block hoses

36. Proper clothing for oxyacetylene welding includes which of the following items?

a. Gloves
b. Goggles
c. Long sleeves
d. All of the above

37. Free acetylene should NOT be released into the air because acetylene:

a. Is combustible
b. Is poisonous
c. Causes equipment to rust
d. Is corrosive

38. The device that controls the pressure of the gas being released from a welding tip is the:

a. Hose
b. Regulator
c. Welding blowpipe
d. Check valve

39. The purpose of "cracking" the cylinder valves is to:

a. Warm up the hose
b. Check valve for leaks
c. Blow dust or dirt out of valve
d. Test pressure

40. In order to close the oxygen or acetylene regulator valves:

a. The regulator handwheel should be turned to the left
b. The regulator handwheel should be turned to the right
c. The blowpipe valves should be turned to the right
d. The regulator handwheel should be turned so it feels tight in the threads

41. How does the tip of a cutting blowpipe differ from th of a welding blowpipe?

    a. A cutting tip has several small holes located around a larger hole in the center of the tip. Welding tip has one hole.
    b. A welding tip has several small holes located around a larger hole in the center of the tip. Cutting tip has one hole.
    c. A cutting tip has many small holes of equal size. Welding tip has holes of different sizes.
    d. None of the above.

42. With a cutting tip, the actual cutting is done by:

    a. Oxyacetylene flame from the small holes
    b. Jet of oxygen from the large hole
    c. Acetylene flame from the center of the tip
    d. Oxygen flame from the outside rim of the tip

43. The number of holes in an oxyacetylene welding tip is:

    a. 1
    b. 2
    c. 4
    d. 6

44. What factors determine the correct type of welding rod?

    a. Thickness of the metal to be welded
    b. Type of metal to be welded
    c. Type and thickness of the metal to be welded
    d. Personal preference

45. What should be used to light an oxyacetylene blowpipe?

    a. Wooden match
    b. Cigarette lighter
    c. Whatever is available
    d. Friction striker

46. What should be used to clean the orifices of an oxyacetylene blowpipe tip?

    a. Wire
    b. Special drill of specific size for tip
    c. Water
    d. Compressed air

Competency:

The student will be able to turn on an oxyacetylene welder.

47. Which blowpipe valve should be opened first when lighting an oxyacetylene welder?

    a. Acetylene
    b. Oxygen
    c. Both at the same time
    d. It makes no difference which is opened first

48. The oxygen and acetylene cylinder valves are:

    a. Opened before the blowpipe valves
    b. Opened after the blowpipe valves
    c. Opened at the same time as the blowpipe valves
    d. Always kept closed

49. If there is difficulty in getting the flame lighted, what is likely to be the cause?

    a. Too much acetylene in the mixture
    b. Too much oxygen in the mixture
    c. Pressure is too high
    d. B and/or C above

50. If a flame burns a long distance away from the blowpipe tip, what is likely to be the cause?

    a. Too much acetylene in the mixture
    b. Too much oxygen in the mixture
    c. Pressure too high
    d. B and/or C above

51. What can cause "Backfiring" of an oxyacetylene blowpipe?

    a. Incorrect oxygen pressure
    b. Incorrect acetylene pressure
    c. Overheating of the blowpipe tip
    d. Any of the above

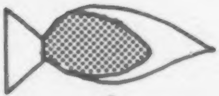
52. What should be done if a "flashback" occurs?

    a. Increase oxygen pressure
    b. Increase acetylene pressure
    c. Close blowpipe and regulator valves at once
    d. Just wait, flame will soon reappear

53. What type of flame is usually used for welding?

- a. Neutral
- b. Oxydizing
- c. Carburizing
- d. None of the above

Use this drawing to answer questions 54 through 56.



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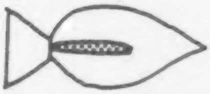

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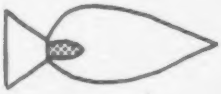


3.

54. Which picture best represents a neutral flame?

- a. #1
- b. #2
- c. #3
- d. None of the above

55. Which picture best represents a carburizing flame?

- a. #1
- b. #2
- c. #3
- d. None of the above

56. Which of the flames pictured would be best for hard facing?

- a. #1
- b. #2
- c. 3#
- d. #4

57. What causes an oxidizing flame?

- a. Insufficient oxygen
- b. Excessive oxygen
- c. Excessive acetylene
- d. Excessive pressure

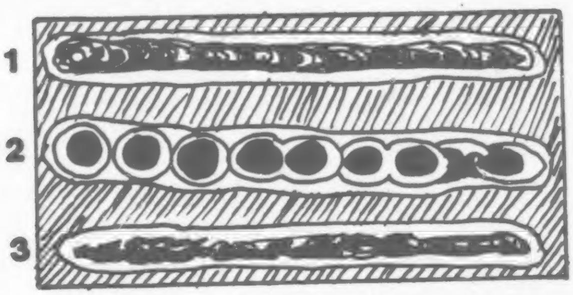
Competency:

The student will learn how to run a bead and cut.

58. When molten metal from a welding rod is added to a puddle as it progresses across a piece of metal, it is called:

    a. Bronze welding
    b. Making a bead
    c. Padding
    d. Brazing

Use the drawing below to answer questions 59 and 60.



59. Which of the beads illustrated above shows that the flame was moved too slowly?

    a. 1
    b. 2
    c. 3
    d. None of the above

60. Which of the beads in the picture would indicate improper penetration?

    a. 1
    b. 2
    c. 3
    d. None of the above

61. Oxygen pressure for cutting as compared to pressure for welding should be:

a. Lower
b. Greater
c. The same
d. Zero

62. What type of flame should be used for cutting steel?

a. Carburizing
b. Oxydizing
c. Neutral
d. None of the above

63. What type of flame should be used for cutting cast iron?

a. Carburizing
b. Oxydizing
c. Neutral
d. None of the above

Competency:

The student will learn how to shut off torches.

64. To turn off an oxyacetylene flame, which valve should be closed first?

a. Acetylene valve of the blowpipe
b. Oxygen valve of the blowpipe
c. Acetylene valve on the cylinder
d. Oxygen valve on the cylinder

65. To turn off an oxyacetylene flame, which valve should be closed last?

a. Acetylene valve of the blowpipe
b. Oxygen valve of the blowpipe
c. Acetylene valve of the cylinder
d. Oxygen valve of the cylinder

66. What should be done to shut down an oxyacetylene welding rig when work is finished for the day?

a. Close oxygen and acetylene cylinder valves
b. Release pressure from hoses and regulators
c. Close blowpipe valves
d. All of the above

Competency:

The student will become familiar with basic arc welding equipment.

67. For personal safety when arc welding, the welder should:

    a. Wear a helmet with visor in place
    b. Wear a helmet, but not a visor
    c. Lift the visor occasionally to get a good view of the arc
    d. Not wear a helmet

68. Proper dress for arc welding should include:

    a. Light clothing, short sleeves for comfort
    b. Whatever the welder prefers
    c. Heavy clothing and gloves to protect from burns
    d. Oil soaked or greasy clothes since they will get dirty anyway

69. Leather gloves are worn when arc welding to protect the hands from:

    a. Electricity
    b. Slag
    c. Ultra-Violet rays
    d. B and C are both correct

70. Direct current means that the electric current travels in how many direction(s)?

    a. One
    b. Two
    c. Alternating
    d. Straight

71. One of the advantages of an A.C. transformer type welder is it has:

    a. Direct current
    b. No rotating or moving parts
    c. Ability to run on gasoline
    d. Ability to be used in the field

72. Which of the following is an advantage of a D.C. portable welder powered with a gasoline engine?

a. Alternating current
b. No moving parts
c. Can be used in the field
d. None of the above

73. Most welding jobs on metal less than 1/4" thick can be performed with an arc welder using an amperage range of about:

a. 50 to 90 amps
b. 90 to 110 amps
c. 110 to 145 amps
d. 145 to 200 amps

74. How is electrode size determined?

a. Diameter
b. Length
c. Weight
d. None of the above

75. Which electrode size is used most frequently in agricultural mechanics?

a. 3/8 inch
b. 1/16 inch
c. 1/8 inch
d. 7/32 inch

76. When is polarity of the electrode a factor?

a. A.C. welding
b. D.C. welding
c. All of the above
d. None of the above

Competency:

The student will learn how to run a bead.

77. A surface that is to be arc welded should first be:

a. Wet down with water
b. Heated with a blowtorch
c. Cleaned with a wire brush

78. To run a clean, uniform bead, the electrode must meet which of the following conditions?

a. Be held at the proper angle to the surface
b. Be held at the proper distance from the surface
c. Move at the proper, steady speed
d. All of the above

79. A narrow bead is most probably caused by improper:

a. Electrode angle
b. Amperage
c. Speed of travel
d. Length of arc

80. A flat, wide bead, irregular in shape with excessive spattering of molten metal is probably caused by:

a. Too short an arc
b. Too high an arc
c. Excessive speed of travel
d. Improperly prepared metal

81. A narrow, high bead and porous weld is probably caused by:

a. Too low amperage
b. Too high an arc
c. Excessive speed of travel
d. Improperly prepared metal

82. The method for striking an arc where the electrode is moved at an angle across the plate as if striking a match is called:

a. Scratching
b. Tapping
c. Matchstick
d. Striking

83. In arc welding, "freezing" means that:

a. There is not enough current to strike an arc
b. The electrode sticks to the plate
c. The metal is too cold to strike an arc
d. The electrode is kept cold before use

84. Arc length refers to the:

a. Length of the electrode
b. Length of the metal to be welded
c. Distance between the molten metal and the electrode
d. Length of time needed to weld

85. Proper arc length for an A.C. machine as compared to arc length for a D.C. machine is generally:

a. Shorter
b. Longer
c. The same
d. Harder to maintain

Competency:

The student will be able to describe maintenance of a farm tractor.

86. How often should the cup on an oil-bath air cleaner be checked if the tractor is used daily?

a. Daily
b. Weekly
c. Monthly
d. Annually

87. How often should an oil-bath air cleaner be washed out with solvent?

a. Daily
b. Weekly
c. Monthly
d. Annually

88. A dry-type air cleaner is usually:

a. Less efficient than oil-bath type
b. More efficient than oil-bath type
c. Same efficiency as oil-bath type
d. Only efficient at a norrow range of engine speeds

89. What may a dirty air filter result in?

a. Excessive engine wear
b. Decreased power
c. Increased fuel consumption
d. All of the above

90. A newly assembled tractor engine backfires. Which of the following would be checked first as a possible cause of this malfunction?

a. One spark plug wire bad
b. Cracked distributor cap
c. Battery voltage too high
d. Improper firing order

91. An engine will not start and there is no high tension spark coming from the coil. Which of the following conditions may cause this malfunction?

a. Spark plugs bad
b. Points not properly adjusted
c. Distributor cap broken
d. Carburetor

92. An engine runs but misses. Which of the following conditions may be a probable cause of this malfunction?

a. Distributor cap defective
b. Undersized battery cables
c. Worn piston ring or bushing
d. Low water level in battery

93. When an engine does not turn over, which of the following conditions may be a possible cause of this malfunction?

a. Bad distributor
b. Points not properly adjusted
c. Corroded terminals on battery
d. None of the above

94. A tractor engine overheats. Which of the following conditions may be a possible cause of this malfunction?

a. Ignition timing late
b. Spark plugs are bad
c. Generator burned out
d. Defective coil

95. Which is the more volatile diesel fuel?

a. Fuel with a cetane number of 40
b. Fuel with a cetane number of 60
c. Fuel with an octane rating of 98
d. Not enough information given

96. In a diesel engine, knocking could be caused by which of the following conditions?

a. Fuel igniting too fast
b. Fuel igniting too slow
c. Clogged air filter
d. None of the above

97. Closing the choke valve allows:

a. Less oil through the engine
b. Less fuel through the carburetor
c. Less air through the carburetor
d. More air through the carburetor

98. What does fuel-air mixture in a diesel engine affect?

a. Horsepower
b. Fuel efficiency
c. Exhaust temperature
d. All of the above

99. Mixing of fuel and air occurs in what part of the engine?

a. Distributor
b. Cylinder
c. Piston
d. Carburetor

100. About how often should crankcase oil be changed in a diesel tractor?

a. 10 to 50 hours
b. 60 to 150 hours
c. 150 to 200 hours
d. 250 hours

101. The lubrication of moving parts in a 4-cycle engine is accomplished by:

a. Fins on the flywheel
b. An oil mixture in the fuel
c. A method of splashing or pumping oil around or upon parts
d. Oil circulating all through the oil-bath type air cleaner

102. The pressure developed by tractor oil pumps is normally between:

- a. 5 and 15 lbs.
- b. 15 and 60 lbs.
- c. 70 and 80 lbs.
- d. 90 and 100 lbs.

103. What is water in a tractor engine used for?

- a. Remove heat from the engine
- b. Lubricate moving parts in the engine
- c. Clean the engine while it runs
- d. None of the above

104. How are small single cylinder gasoline engines generally cooled?

- a. Water cooled
- b. Combined water and air cooled
- c. Air cooled
- d. None of the above

105. Pressurized radiator caps are used to:

- a. Keep the water in the radiator
- b. Increase the water volume
- c. Increase the boiling temperature of the water
- d. Keep foreign material from getting inside

Competency:

The student will learn proper operation of a farm tractor.

106. To safely dismount a tractor, the tractor:

- a. Can be moving, but must be out of gear
- b. Should be completely stopped
- c. Can be moving, but the engine must be shut off
- d. Should be in gear, but shut off

107. When pulling a load down a steep decline, the tractor should be:

- a. Taken out of gear
- b. Shifted to a higher gear
- c. Shifted to a low gear
- d. Shut off

108. A tractor's PTO shaft should be:

a. Left exposed for visibility and accessibility
b. Covered with a safety shield when not in use
c. Covered with a safety shield when in use
d. B and C are both correct

109. What is the first step to starting a tractor?

a. Put it in gear with the clutch in
b. Take it out of gear
c. Put it in gear and lock the brake
d. None of the above

110. For safe refueling of a tractor, which of the following procedures should be followed?

a. Shut tractor off
b. Don't smoke
c. Wait a few minutes before starting up
d. All of the above

Competency:

The student will learn to identify major systems of a small gasoline engine.

111. In a gasoline engine, the part that provides a spark inside the cylinder is called the:

a. Breaker point
b. Flywheel
c. Spark plug
d. Magneto

112. The small air-cooled gasoline engine can be described as a:

a. External combustion engine
b. High compression engine
c. Low compression engine
d. Internal combustion engine

113. The part that measures gasoline vapor and air supplied to the cylinder is the:

a. Gasoline tank
b. Air cleaner
c. Carburetor
d. Intake valve

114. In order to provide a good seal for compression within the cylinder, the piston is:

a. Equipped with compression ring(s)
b. Tapered so that it works like a cork in a bottle
c. Equipped with an oil ring which seals off the small air gaps with oil
d. Tightly fitted so no fuel or gas can escape even if no piston rings were used

115. In a 2-cycle engine, the fuel-air mixture which is passing into the cylinder during the intake stroke has just prior to this been contained in the:

a. Piston
b. Crankcase
c. Gas tank
d. Carburetor

116. The connecting rod connects the piston to the:

a. Cylinder
b. Carburetor
c. Crankshaft
d. Rings

Competency:

The student will be able to describe the basic fundamentals of how a small engine operates.

117. How are small single cylinder engines generally cooled?

a. Water cooled
b. Combined water and air cooled
c. Air cooled
d. None of the above

118. If a 4-stroke cycle engine is operating at 1800 cycles per minute how many times does the crankshaft turn per minute?

a. 1800
b. 3600
c. 2400
d. 900

119. The full travel of the piston in one direction is called a:

a. Cycle
b. Piston motion
c. Movement
d. Stroke

120. The fuel-air mixture is compressed in the cylinder during the:

a. Compression stroke
b. Exhaust stroke
c. Intake stroke
d. Power stroke

121. The fuel-air mixture is drawn into the cylinder during the:

a. Compression stroke
b. Intake stroke
c. Exhaust stroke
d. Power stroke

122. The fuel-air mixture is ignited at the end of the:

a. Compression stroke
b. Exhaust stroke
c. Power stroke
d. Intake stroke

123. The unburned fuel is forced out of the cylinder during the:

a. Compression stroke
b. Exhaust stroke
c. Power stroke
d. Intake stroke

124. The fuel-air mixture in a two-cycle engine enters the cylinder through the:

a. Intake valve
b. Fuel injector
c. Intake port
d. Exhaust valve

Competency:

The student will be able to describe preventative maintenance of a small gasoline engine.

125. When an engine will not start, which of the following procedures should be followed?

a. Make sure all tools are together
b. Replace the spark plug with a new one
c. Adjust the carburetor to the setting in the repair manual
d. Follow trouble shooting procedures

126. How is clean air delivered to the carburetor?

a. A sediment bowl is located in the air intake system
b. An air vane type governor is used to regulate the clean air intake
c. A breather assembly is installed in the crankcase
d. An air cleaner is used

127. Feeler gauges can be used in checking which of the following clearances?

a. Piston ring and gap
b. Piston cylinder clearance
c. Crankshaft and play
d. All of the above

128. "Flooding" of an engine can be verified by removing the spark plug and determining if the plug:

a. Has burnt electrodes
b. Is wet with oil
c. Gap is too wide
d. Is wet with fuel

129. In checking a small gasoline engine cylinder for wear, check for:

a. Diameter and taper
b. Out of round and taper
c. Diameter, taper and out of round
d. Diameter only

130. How is a 4-cycle engine lubricated?

a. Oil and gasoline in oil sump
b. Oil and gasoline in the fuel tank
c. Oil in crankcase
d. None of the above

131. Lubrication of a 2-cycle engine is done by:

a. Oil in the crankcase
b. Oil mixed with gasoline in the fuel tank
c. Oil in the oil sump
d. Use of a radiator

132. If the air cleaner on a small gasoline engine is not kept clean which of the following conditions may occur?

a. Dirt and dust can enter the engine and mix with lubrication oil
b. Dirt and dust can build up on the filter, choke the engine and cause an excessively rich fuel air mixture
c. Both of the above can occur
d. None of the above

133. The air cleaner on a small gasoline engine should be cleaned:

a. At least once for every 25 hours of operation
b. After 50 hours of operation
c. After 100 hours of operation
d. Small gasoline engine air cleaners do not need to be cleaned

134. Why does oil in a small gasoline engine generally need to be changed more often than in a large engine?

a. Most small gasoline engines do not have an oil filter
b. The oil in small air cooled engines runs hotter than in larger, water cooled engines
c. Small engines are often operated under dusty conditions
d. All of the above

135. The oil level of a four-cycle engine should be checked:

a. Once a week
b. Every time engine is refueled
c. After 30 hours of operation
d. After 50 hours of operation

Competency:

The student will identify tools used to service small engines.

136. The tool used in removing the valves from a small engine is the:

  a. Valve spring retainer
  b. Valve stem
  c. Valve spring compressor
  d. None of the above

137. The tool used to check valve-tappet clearance is the:

  a. Micrometer
  b. Feeler gauge
  c. Ruler
  d. Tension tester

138. The tool used to hold piston ring in place while piston is installed is the:

  a. Ring expander
  b. Pliers
  c. Ring wrench
  d. Ring compressor

139. The tool used to test the charge from the ignition system is the:

  a. Tension tester
  b. Spark tester
  c. Feeler gauge
  d. Micrometer

140. The instrument used to test an engine's idle speed is the:

  a. Tachometer
  b. Micrometer
  c. Speedometer
  d. Hydrometer

APPENDIX E

ANSWER KEY FOR AGRICULTURAL MECHANICS

ANSWER KEY

AGRICULTURAL MECHANICS

Test Item	Answer
1	D
2	C
3	C
4	D
5	D
6	B
7	A
8	D
9	B
10	A
11	B
12	C
13	B
14	D
15	C
16	A
17	A
18	B
19	D
20	C
21	A
22	B
23	B
24	C
25	A
26	C
27	D
28	A
29	D
30	B
31	C
32	B
33	B
34	A
35	C
36	D
37	A
38	B
39	C
40	A
41	A
42	B
43	A
44	B
45	D

Agricultural Mechanics

Test Item	Answer
46	B
47	A
48	A
49	D
50	A
51	D
52	C
53	A
54	B
55	A
56	A
57	B
58	B
59	B
60	C
61	B
62	C
63	A
64	A
65	B
66	D
67	A
68	C
69	C
70	A
71	B
72	C
73	B
74	A
75	C
76	B
77	C
78	D
79	B
80	B
81	A
82	A
83	B
84	C
85	C
86	A
87	D
88	A
89	D
90	D

Agricultural Mechanics

Test Item	Answer
91	B
92	A
93	C
94	A
95	B
96	A
97	C
98	D
99	D
100	B
101	C
102	B
103	A
104	C
105	C
106	B
107	C
108	C
109	B
110	D
111	C
112	D
113	C
114	A
115	B
116	C
117	C
118	B
119	D
120	A
121	B
122	A
123	B
124	C
125	D
126	D
127	D
128	D
129	C
130	C
131	B
132	C
133	A
134	D
135	B
136	C
137	B
138	D

Agricultural Mechanics

Test Item	Answer
139	B
140	A

APPENDIX F

TEST ITEMS FOR INSTRUCTIONAL AREA OF LEADERSHIP

TEST ITEMS FOR LEADERSHIP

Competency:

The student will be able to determine what the FFA represents.

1. Membership in the FFA is:

   a. Voluntary
   b. Involuntary
   c. Compulsory

2. The official colors of the FFA are:

   a. Blue and white
   b. White and gold
   c. Blue and gold

3. The FFA is a natioal organization of, by, and for:

   a. Boys
   b. Students
   c. Rural students

4. Greenhands are entitled to wear emblems of:

   a. Gold
   b. Silver
   c. Bronze

5. Chapter Farmers are entitled to wear emblems of:

   a. Gold
   b. Silver
   c. Bronze

6. State Farmers are entitled to wear emblems of:

   a. Gold
   b. Silver
   c. Bronze

TRUE(A) AND FALSE(B)

A B 7. The FFA is an organization strictly for students who live on farms.

A B 8. The FFA is an organization for students enrolled in vocational agriculture.

A B 9. A purpose of the FFA is to develop competent; aggressive rural and agricultural leadership.

Competency:

The student will be able to explain the history of the FFA.

10. What year was the FFA founded?

    a. 1917
    b. 1928
    c. 1936

11. What year was the Florida FFA chartered?

    a. 1928
    b. 1929
    c. 1931

TRUE(A) OR FALSE(B)

A B 12. The Smith-Hughes Act encouraged states to promote and develop programs of vocational agriculture.

A B 13. The Vocational Education Act of 1963 appropriated a sum of $225,000,000 for the development of vocational education.

Competency:

The student will be able to understand the different degrees of membership.

TRUE(A) OR FALSE(B)

A B 14. The Chapter Farmer degree is conferred by the local chapter.

A B 15. A member should be familiar with the FFA Creed and its purpose to be awarded the Greenhand Degree.

A B 16. A Greenhand Degree must be attained by the member before receiving the Chapter Degree.

A B 17. A student must earn at least $25 in an agriculturally related project to be awarded the Chapter Farmer Degree.

A B 18. The American Farmer Degree is awarded by the State Association.

A B 19. A State Farmer Degree applicant must have earned $1,000 in an agriculturally related project.

A B 20. Proficiency in parliamentary procedure is a requirement of the State Farmer Degree.

Competency:

The student will be able to determine types of programs offered by the FFA.

TRUE(A) OR FALSE(B)

A B 21. A community service program offered by the FFA is the B.O.A.C. program.

A B 22. The Food of America program is designed to promote increased crop production by American Farmers.

A B 23. A Supervised Occupational Experience Program is designed for students to get on-the-job experience.

A B 24. The National FFA's highest award is the American Chapter Farmer.

__Competency__:

The student will learn elementary parliamentary procedure practices.

25. Which of the following officers is in charge of committee work in general and assists the president?

    a. Secretary
    b. Treasurer
    c. Reporter
    d. Vice-President

26. The officer who sets up the meeting room and cares for the paraphernalia is the:

    a. President
    b. Sentinel
    c. Chaplain
    d. Reporter

27. Which of the following officers prepares and reads the minutes of the meetings and attends to the chapter correspondence?

    a. Secretary
    b. Reporter
    c. Sentinel
    d. Treasurer

28. Which of the following changes is __NOT__ a method of amending a motion?

    a. Adding words
    b. Striking out words
    c. Keeping the original words
    d. Substituting words

29. The action by which a member may inform the chapter of a mistake in the proceedings is called:

    a. Previous question
    b. Rising to a point of order
    c. Question of privilege
    d. Parliamentary inquiry

30. Which of the following actions requires a 2/3 vote to pass?

a. Main motion
b. Lay on the table
c. Refer to a committee
d. Suspend the rules

TRUE(A) OR FALSE(B)

A B 31. The Chapter president's place is beneath the rising sun.

APPENDIX G

ANSWER KEY FOR LEADERSHIP TEST ITEMS

ANSWER KEY

LEADERSHIP

Test Item	Answer
1	A
2	C
3	B
4	C
5	B
6	A
7	B
8	A
9	A
10	B
11	B
12	A
13	A
14	A
15	A
16	A
17	B
18	B
19	A
20	A
21	A
22	B
23	A
24	B
25	D
26	B
27	A
28	C
29	B
30	D
31	A

APPENDIX H

TEST ITEMS FOR INSTRUCTIONAL AREA OF PLANT SCIENCE

TEST ITEMS FOR

PLANT SCIENCE

Competency:

The student will be able to classify plants botanically.

1. The kingdom in which corn is classified is the __________ kingdom.

   a. Species
   b. Animal
   c. Botany
   d. Plant

2. Corn is classified in the ________________ phylum.

   a. Angiosperm
   b. Species
   c. Zea
   d. Spermatophyte

3. Corn is classified in the ________________ class.

   a. Zea maize
   b. Glumi florue
   c. Angiosperm
   d. Dixie 82

4. Corn is in the ________________ order.

   a. Graminae
   b. Zea
   c. Plant
   d. Glumiflorue

5. Corn is classified in the ________________ family.

   a. Legume
   b. Grass
   c. Zea
   d. Zea maize

6. Corn belongs to the ______________ genus.

   a. Plant
   b. Legume
   c. Zea
   d. Zea Maize

7. Corn is classified in the ______________ species.

   a. Plant
   b. Legume
   c. Zea
   d. Maize

TRUE(A) OR FALSE(B)

A B 8. There are five divisions of phyla in the plant kingdom.

A B 9. Corn is classified in the legume family.

A B 10. The tomato is a member of the nightshade family.

A B 11. The strawberry is classified in the rose family.

A B 12. Peanuts are classified as grasses.

Competency:

The student will be able to identify plants by their life cycle.

13. Perennials are plants that live _______ seasons.

   a. One
   b. Two
   c. More than two
   d. Less than two

14. Annuals complete their life cycle within _______ year(s).

   a. One
   b. Two
   c. Three
   d. Four

15. A common plant that can be classified as an annual is:

a. Corn
b. Pecans
c. Pines
c. Cedars

Competency:

The student will be able to identify plants by their use.

TRUE(A) OR FALSE(B)

A B 16. Alfalfa is classified as a nitrogen-fixing plant.

Competency:

The student will be able to determine the form and basic structure of a plant.

A B 17. The word "cotyledon" means seed-leaf.

A B 18. Legumes are classified as monocotyledons.

A B 19. Dicotyledons have one seed-leaf per seed.

A B 20. Monocotyledons have two seed-leaves per seed.

A B 21. Grasses are classified as monocotyledons.

Competency:

The student will be able to determine the parts of a plant.

22. Stems may be classified as:

a. Woody
b. Compound
c. Grass
d. Primary

23. A leaf is said to be simple when the blade is in how many pieces?

a. One
b. Two
c. Three
d. Four

24. Roots found on plants such as the water hyacinth are classified as:

a. Aerial
b. Tap
c. Woody stem
d. Aquatic

25. Roots found on plants such as tropical orchids are classified as:

a. Tap
b. Aquatic
c. Aerials
d. Woody stem

26. The place where plants store food and their embryo is the:

a. Roots
b. Leaves
c. Seeds
d. Xylem

27. The outermask leaf-like part covering the flower before it opens are called:

a. Sepals
b. Petals
c. Ovary
d. Style

28. Perfect flowers are those with both stamens and:

a. Pistels
b. Sepals
c. Petals
d. Filament

29. The male part of a plant is called the:

a. Sepal
b. Stamen
c. Pistil
d. Petal

TRUE(A) OR FALSE(B)

A B 30. The primary function for the leaf is photosynthesis.

A B 31. The primary function of the stem is to absorb water and raw materials.

A B 32. The function of the root cap is to protect the young root tip.

A B 33. The anther of a flower supports the pistil.

A B 34. Plants absorb water primarily through the root hairs.

Competency:

The student will be able to identify and describe growth regulators.

A B 35. Growth regulators are usually effective on all green plants.

Competency:

The student will be able to identify plant nutrients.

36. An element that gives dark green color to plants is:

a. Phosphorus
b. Potassium
c. Sulphur
d. Nitrogen

37. The element that increases a plant's vigor and disease resistance in plants is:

a. Phosphorus
b. Potassium
c. Sulphur
d. Nitrogen

38. A source of nitrogen in the soil is:

- a. Soil particle
- b. Organic matter
- c. Potash
- d. Plant roots

39. Plants that are able to obtain nitrogen from the air are called:

- a. Grasses
- b. Trees
- c. Legumes
- d. Pods

40. Approximately what percent of the atmosphere is nitrogen?

- a. 20
- b. 50
- c. 60
- d. 80

TRUE(A) OR FALSE(B)

A B 41. Mineral elements in the soil are in chemical solution so the plants roots can absorb them.

A B 42. Geotropism is the plant root's response to different amounts of sunlight.

A B 43. Mineral deficiencies or toxicities are classified as nonparasitic plant diseases.

A B 44. Repeated mowings can reduce a plant's food supply.

Competency:

The student will be able to describe plant reproduction.

45. What type of flowers have all four organs - both reproductive and floral?

- a. Incomplete
- b. Complete
- c. Sepal
- d. Petal

46. The transfer of pollen from the stamen to the pistil is called:

a. Sepalation
b. Germination
c. Pistilation
d. Pollination

47. An example of asexual reproduction is:

a. Grafting
b. Anthesis
c. Pollination
d. Germination

48. The method whereby a plant is regenerated by taking a leaf or stem cutting and inserting it into a soil medium is known as:

a. Grafting
b. Budding
c. Layering
d. Cutting

49. Cell division takes place in the:

a. Seed
b. Meristem
c. Cell
d. Protoplasm

TRUE(A) OR FALSE(B)

A B 50. Pollination is a function of the male flowers on a plant.

A B 51. The storing of food in seeds and fruit is a function of the female plant.

A B 52. Corn is both self-pollinating and cross-pollinating.

A B 53. True fruits develop directly from the blossom on a plant.

A B 54. Asexual reproduction can be used in developing new varieties of plants.

A B 55. In layering, roots are sprouted on the stem of the parent plant.

A B 56. Careful selection fo seedlings is of considerable value in developing new varieties of plants.

A B 57. Seeds contain the embryo of a new plant.

Competency:

The student will be able to describe the germination of a seed.

58. The first part to usually emerge from the seed coat is the

a. Primary root
b. Secondary root
c. Simple root
d. Aerial root

Competency:

The student will be able to describe the methods associated with planting and transplanting.

TRUE(A) OR FALSE(B)

A B 59. Transplanting can be done during a plant's dormant period with a greater chance that the plant will survive.

Competency:

The student will be able to list and identify major plant pests.

60. Most plant diseases are caused by:

a. Stunting
b. Parasites
c. Unbalancing
d. Transpiration

61. Very small animals that feed on cell sap in certain plant tissues are:

a. Viruses
b. Fungi
c. Nematodes
d. Bacteria

62. A plant that grows where it is not wanted is defined as a (an):

a. Annual
b. Biennial
c. Weed
d. Legume

TRUE(A) OR FALSE(B)

A B 63. Bacteria, fungi, and viruses are classified as plant pathogens.

A B 64. Most plant parasites are dependent to a great extent on various agents for their spread.

A B 65. Insects are classified according to the way they feed on plants.

A B 66. Internal feeding insects enter the plant and feed from within the plant.

A B 67. Insects reduce yields and lower the quality of crop production.

A B 68. Some insects harmful to crop production can be controlled by releasing other insects that prey on them.

A B 69. Insects are unable to adapt to the habitat around them.

A B 70. Insects having life-styles in which the young resemble the adults have four stages in their lives.

Competency:

The student will learn what methods to use to control plant pests.

A B 71. Control measures of insects are aimed at the weakest link in their life cycle.

A B 72. Insecticides are used to control weeds.

A B 73. A pesticide is a poisonous chemical that is used to control pests either animal or plant.

A B 74. Herbicides are used to kill weeds or any plant growing out of place.

A B 75. Tillage operations are effective on most small annual weeds even when all the growing points are not buried.

A B 76. Mowing is effective in controlling many small and tall-growing plants.

Competency:

The student will be able to list possible careers in plant science and forestry.

77. A forester can be defined as:

a. A college graduate in the field of forestry
b. Producer of timber for harvest
c. Responsible for maintaining park grounds

78. Which of the following occupations is involved with the planting, growing, and harvesting of greenhouse plants for sale to the public or retail outlet?

a. Garden center salesperson
b. Nursery worker
c. Greenhouse worker

79. Which of the following workers grows seedlings and plants for landscaping, fruit farming, and forest replanting?

a. Nursery worker
b. Greenhouse worker
c. Nursery salesperson

80. Which of the following is trained to mow greens, fairways and other areas, relocate tee markers and cups and perform other maintenance tasks?

a. Golf course mechanic
b. Golf course maintenance worker
c. Grounds worker

Competency:

The student will learn the importance of forestry.

81. The definition ... "the science, art, and practice of managing and using for human benefit the natural resources which occur on and in association with forest lands" belongs to which of the following fields?

    a. Ecology
    b. Conservation
    c. Forestry
    d. Environmental management

82. Which of the following wood forms produces explosives, chewing gum, drugs, and shoe polish?

    a. Logs
    b. Cordwood
    c. Gums

83. Which of the following wood forms produces acetate, cellophane, paper, wood plastics and fiberboard?

    a. Cordwood
    b. Stumps
    c. Gums

84. Which of the following wood forms produces lumber, veneer, plywood, and furniture?

    a. Gums
    b. Cordwood
    c. Logs

85. In addition to wood products, the forest also provides man with which of the following benefits?

    a. Wildlife
    b. Recreation
    c. Beauty
    d. All of the above

Competency:

The student will be able to survey forest area types in the U.S.

Use the attached map of forest regions of the United States to answer questions 86-94.

86. The Pacific Coast Forest is designated by number:

a. #1
b. #2
c. #3
d. #5

87. The Central Hardwood Forest is designated by number:

a. #2
b. #3
c. #4
d. #5

88. The Southern Forest is designated by number:

a. #1
b. #2
c. #3
d. #4

89. The Rocky Mountain Forest is designated by number:

a. #1
b. #2
c. #4
d. #5

90. A forest of primarily Redwood, Douglas Fir, Hemlock, Spruce, and Cedar is designated by number:

a. #1
b. #2
c. #4
d. #5

91. A forest of primarily Oaks, Hickory, Beech, and Maple is designated by number:

a. #2
b. #3
c. #4
d. #5

92. A primarily White Pine, Spruce, Cedar, Aspen, and Birch forest is designated by number:

a. #1
b. #3
c. #4
d. #5

93. A primarily Loblolly, Longleaf and Shortleaf Pine, Cypress, and Oak forest is designated by number:

a. #2
b. #3
c. #4
d. #5

94. A primarily Ponderosa and Lodgepole Pine, Fir, Spruce, Cedar, and Aspen forest is designated by number:

a. #1
b. #2
c. #3
d. #4

Competency:

The student will become aware of forest agencies, organizations, and branches.

95. Which of the following agencies is a bureau in the U.S. Department of Agriculture, cooperates with state agencies, and is primarily responsible for the National Forests?

a. U.S. Department of the Interior
b. U.S. Park Service
c. U.S. Forest Service

96. The governmental agency that checks erosion and soil in our forest is the:

a. Florida Division of Forestry
b. Soil Conservation Service
c. U.S. Forest Service

97. The state forestry agency in Florida is called the:

a. Florida Forestry Commission
b. Florida Department of Forestry Development
c. Florida Division of Forestry, Department of Agriculture and Consumer Services

Competency:

The student will be able to recognize 30 common forest trees in Florida.

98. Which of the following trees is know for its wide spreading habit, has a short stout trunk, and has leaves that are green with silvery white underside?

    a. Live Oak
    b. Swamp Chestnut
    c. Water Oak

99. Which of the following pines have needles 6-9 inches in length with 3 to a sheath, and a bark dark in color and deeply furrowed?

    a. Slash
    b. Longleaf
    c. Loblolly

100. Which of the following pines have needles 8-12 inches in length with 2 or 3 to a sheath and is used for gum production as well as lumber?

    a. Longleaf
    b. Slash
    c. Loblolly

APPENDIX I

ANSWER KEY FOR PLANT SCIENCE TEST QUESTIONS

ANSWER KEY

PLANT SCIENCE

Test Item	Answer
1	D
2	D
3	C
4	D
5	B
6	C
7	D
8	B
9	B
10	A
11	A
12	B
13	C
14	A
15	A
16	A
17	A
18	B
19	B
20	B
21	A
22	A
[illegible]	A
24	D
25	C
26	C
27	A
28	A
29	B
30	A
31	B
32	A
33	B
34	A
35	B
36	C
37	B
38	B
39	C
40	D
41	A
42	B
43	A
44	A
45	B

Plant Sciences

Test Item	Answer
46	D
47	A
48	D
49	B
50	A
51	A
52	A
53	A
54	B
55	A
56	A
57	A
58	A
59	A
60	B
61	C
62	C
63	A
64	A
65	A
66	A
67	A
68	A
69	B
70	B
71	A
72	B
73	A
74	A
75	B
76	B
77	A
78	C
79	A
80	B
81	C
82	C
83	A
84	C
85	D
86	A
87	C
88	C
89	B
90	A

Plant Sciences

Test Item	Answer
91	C
92	D
93	B
94	B
95	C
96	B
97	C
98	A
99	C
100	B

APPENDIX J

TEST ITEMS FOR INSTRUCTIONAL AREA OF AGRIBUSINESS MANAGEMENT

TEST ITEMS

AGRIBUSINESS MANAGEMENT

Competency:

The student will be able to identify an Agribusiness.

1. Movement of farm commodities to market has become easier because of better methods of:

   a. Transportation
   b. Marketing
   c. Wholesaling
   d. Processing

2. Storage of perishable farm products has been improved because of better techniques of:

   a. Transportation
   b. Marketing
   c. Processing
   d. Consumer

3. What is the price that consumers pay at a supermarket called?

   a. Retail
   b. Wholesale
   c. Credit
   d. Bargain

4. Marketing is all business activities involved in the flow of goods and services from the point of initial production until they are in the hands of the:

   a. Wholesaler
   b. Consumer
   c. Retail store processor
   d. Food market

5. A marketing channel can be defined as the:

   a. Route a product takes from producer to consumer
   b. Way a product is transported to the market place
   c. Line of communication between the buyer and the seller
   d. Process of receiving market information via T.V.

6. If the price of an agricultural commodity is too low, demand will be greater than the supply resulting in a:

- a. Surplus
- b. Monopoly
- c. Shortage
- d. Slump

7. "Processing" as a marketing function is:

- a. Putting the product in a salable container
- b. Maintaining productivity in a facility
- c. Gathering a product at a convenient place
- d. Changing the form of the product to meet the consumer demand

TRUE(A) OR FALSE(B)

A B 8. Credit is the use of money, goods, or services provided by someone else.

A B 9. The value, or worth of a commodity to a person is the price.

A B 10. The demand for a commodity is the amount supplied by the consumers.

A B 11. The supply for a commodity is the amount demanded by the sellers.

A B 12. The marketing of farm products begins when the farmers sell their commodities.

A B 13. Terminal markets are large markets where farm products are assembled from a large area.

Competency:

The student will be able to analyze an agribusiness.

14. Dividing the number of days worked by the number of full time workers results in an accurate measure of:

- a. Productivity
- b. Distribution of labor
- c. Man-work units

15. A detailed listing of all goods or property with an estimated value placed on each item is called:

    a. Total income
    b. Inventory
    c. Net worth

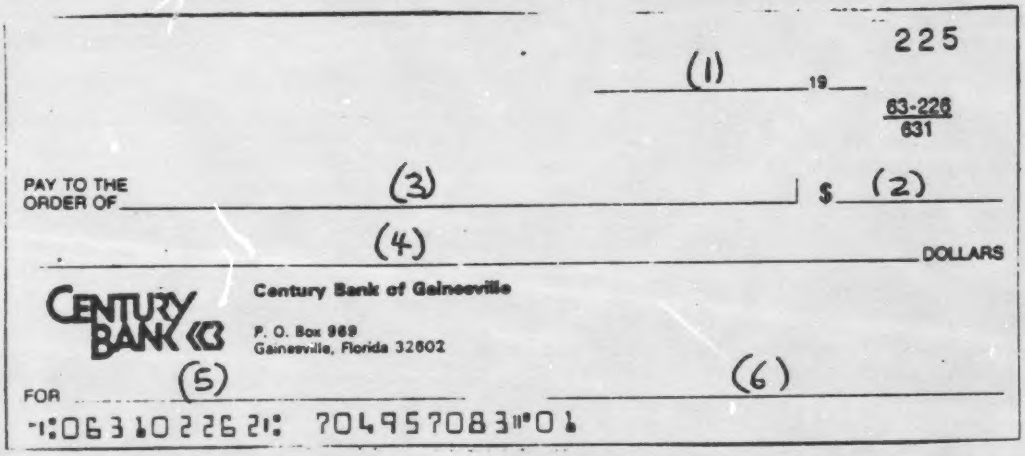
16. If an agribusiness has a labor force of 3 and has 726 total productive man-work units, what are the productive man-work units per employee?

    a. 242
    b. 726
    c. 2,178

Competency:

The student will be able to determine the properties of good money management.

Use the "check" below to answer questions 17 - 20.



225

(1) 19__

63-226
631

PAY TO THE ORDER OF (3) $ (2)

(4) DOLLARS

CENTURY BANK

Century Bank of Gainesville

P. O. Box 989
Gainesville, Florida 32602

FOR (5) (6)

:063102262: 704957083"01

17. At what number is the signature put on the check?

    a. 1
    b. 3
    c. 5
    d. 6

18. At what number on the check is the amount written out?

a. 1
b. 3
c. 4
d. 5

19. At what number on the check is the person's name who the check is made payable to written?

a. 1
b. 3
c. 4
d. 6

20. At what number on the check is the amount of the check entered?

a. 1
b. 2
c. 5
d. 6

21. The amount of money that banks charge customers for borrowing money is called:

a. Credit
b. Debt
c. Credit rating
d. Interest

22. Public lenders are agencies that are capitalized and supervised by the:

a. Public
b. Government
c. Saving and loan company
d. Credit agency

23. A listing of income and expenses for a given period is called a:

a. Budget
b. Credit rating
c. Deposit
d. Check register

24. Income minus expenses equals:

a. Profits
b. Credit rating
c. Deposit
d. Budget expense

25. Which of the following is NOT a recommended practice for developing a good credit rating?

a. Keep good records of farm enterprise
b. Make loan payments on time
c. Borrowing from a credit agency to pay off a loan made by the bank
d. Filling out loan applications with correct information.

26. Long-term credit is usually used when buying:

a. Land and real estate
b. Farm machinery
c. Agricultural supplies
d. Personal car

27. When verifying the accuracy of a monthly checking account balance, what must a depositer consider?

a. Beginning bank balance
b. Service charges
c. Outstanding checks
d. All of the above

TRUE(A) OR FALSE(B)

A B 28. A credit rating is determined by a person's ability to repay debts.

A B 29. Production loans are made for a term of two years or less.

Competency:

The student will be able to determine the different types of agribusiness business structures.

30. Pooling of farm products together for marketing purposes is a characteristic of:

a. Corporations
b. Partnerships
c. Cooperatives
d. Sole-Proprietors

31. A farm business owned and operated by one person is an example of what type of ownership?

a. Corporation
b. Partnership
c. Sole-Proprietor
d. Cooperative

32. A farm business owned and operated by at least two people, but not more than four is an example of what type of ownership?

a. Corporation
b. Partnership
c. Sole-Proprietor
d. Cooperative

33. A farm business owned by various stockholders and operated by a farm manager is an example of what type of ownership?

a. Corporation
b. Partnership
c. Sole-Proprietor
d. Cooperative

TRUE(A) OR FALSE(B)

A B 34. Private lending agencies are capitalized and supervised by the government.

Competency:

The student will demonstrate the ability to keep accurate business records.

Use the following information to answer questions 35-43.

Assets (receipts)

A. Sale of 20 Holstein heifers @$200/animal
B. Sale of 100,000 lbs. of milk at $10/hundred weight
C. Sale of 30 Angus steers @$300/animal
D. Custom machine work at $10/hour for 100 hours

Liabilities (expenses)

A. 1,000 gallons of fuel at $1 per gallon
B. 20,000 lbs. of feed at $80 per ton
C. Labor (part-time) $3,000
D. Bought a new hay baler for $5,000

35. How much did the farmer earn by selling his Holstein heifers?

a. $ 400
b. $ 800
c. $4,000
d. $8,000

36. What was the farmer's total milk-check worth?

a. $1,000
b. $10,000
c. $100,000
d. $1,000,000

37. How much did the farmer earn by selling his Angus steers?

a. $ 900
b. $9,000
c. $10,000
d. $90,000

38. How much did the farmer earn from his custom machine work?

a. $ 100
b. $1,000
c. $1,100
d. $10,000

39. What were the farmer's total assets?

a. $14,000
b. $24,000
c. $34,000
d. $124,000

40. How much did the farmer spend on fuel?

a. $ 500
b. $1,000
c. $1,100
d. $10,000

41. What was the farmer's total feed bill?

a. $ 800
b. $1,400
c. $4,000
d. $8,000

42. What were the farmer's total liabilities?

a. $1,800
b. $2,500
c. $9,800
d. $17,000

43. What was the farmer's total profit?

a. $11,500
b. $14,200
c. $22,200
d. $24,000

TRUE(A) OR FALSE(B)

A B 44. When the value of a piece of equipment increases, this is called depreciation.

Competency:

The student will develop knowledge of agribusiness careers.

45. Fields related to agriculture are often referred to as:

a. Collective farming
b. Cooperative enterprise
c. Agribusiness
d. Organized agriculture

46. The federal agency which employs the most agricultural engineers is the:

a. Department of the Interior
b. Department of Defense
c. Department of Commerce
d. Department of Agriculture

47. A broad objective of the county agriculture agent is to:

a. Distribute agricultural bulletins
b. Decrease the cost of Extension programs
c. Increase efficiency of agricultural production and marketing
d. Recruit more Extension Service workers

48. The agricultural writer belongs to a field of specialization known as:

a. Mass media
b. Agricultural administration
c. Agricultural communications
d. Publicity

Competency:

The student will be able to determine supervised occupational work experiences.

49. A Supervised Occupational Experience Program (SOEP) includes experience in which of the following area?

a. Production agriculture
b. Agribusiness
c. Improvement projects
d. All of the above

50. Which is NOT a characteristics of a SOEP activity?

a. Keeping accurate records
b. Competing for awards
c. No opportunity for degree advancement
d. Earning income

APPENDIX K

ANSWER KEY FOR AGRIBUSINESS MANAGEMENT TEST ITEMS

ANSWER KEY

AGRIBUSINESS MANAGEMENT

Test Item	Answer
1	A
2	C
3	A
4	B
5	A
6	C
7	D
8	A
9	A
10	B
11	B
12	A
13	A
14	C
15	B
16	A
17	D
18	C
19	B
20	B
21	D
22	B
23	A
24	A
25	C
26	A
27	D
28	A
29	A
30	C
31	C
32	B
33	A
34	B
35	C
36	A
37	B
38	B
39	B
40	B
41	A
42	C
43	B
44	B
45	C

Agribusiness Management

Test Item	Answer
46	D
47	C
48	C
49	D
50	C

APPENDIX L

TEST ITEMS FOR INSTRUCTIONAL AREA OF SOIL SCIENCE

TEST ITEMS FOR
SOIL SCIENCE

Competency:

The student will be able to describe how soil is formed.

1. The rate of weathering of soil is greatly affected by:

    a. Temperature
    b. Man
    c. Soil aeration
    d. Organic matter

2. When soil temperature rises, the rate of chemical reaction

    a. Stops
    b. Decreases
    c. Increases
    d. Remains the same

3. Soils are usually more fertile and have better soil structure that have developed under:

    a. Hardwoods
    b. Grasslands
    c. Legumes
    d. Corn

4. The mass of material from which soil develops is called:

    a. Bedrock
    b. Organic matter
    c. Parent material
    d. Weathering

TRUE(A) OR FALSE(B)

A B 5. Weathering is the effect of the elements on soil.

A B 6. Rainfall is a source of weathering on soil.

A B 7. Freezing and thawing of soil is NOT a form of weathering.

A B 8. Mechanical disintegration of soil is caused by the effects of weathering.

A B 9. Soil is the link between the rock core of the earth and life as it exists in and on it's surface.

A B 10. Erosion is the act of wearing or removing a portion, or all, of the layers of a soil profile.

Competency:

The student will be able to describe different soil colors.

11. Which of the following soil characteristics is useful in distinguishing boundaries of different soil, indicates internal wetness, water-logged conditions and aids in estimating organic matter and salt content?

    a. Soil consistency
    b. Soil density
    c. Soil color

12. The dominant color of soil (example red, yellow, blue, green) is referred to as:

    a. Hue
    b. Value
    c. Chroma

13. The relative blackness or whiteness of the soil color is referred to as:

    a. Hue
    b. Value
    c. Chroma

14. The purity of the soil color which increases as grayness decreases is called:

    a. Hue
    b. Value
    c. Chroma

Conpetency:

The student will be able to identify the components of soil.

15. Which of the following terms refers to the shape of land surfaces?

    a. Parent material
    b. Topography
    c. Soil profile

16. Which of the following substances refers to the mixture of plant and animal materials which vary in degree of decomposition?

    a. Soil thickness
    b. Parent material
    c. Organic matter

17. Which of the following materials lies beneath the surface soil and has the characteristics of the true nature of the soil?

    a. Bedrock
    b. Organic matter
    c. Topsoil
    d. Subsoil

Competency:

The student will be able to define components of the soil.

TRUE(A) OR FALSE(B)

A B 18. There are sixteen macronutrients found in the soil.

A B 19. There are nine micronutrients found in the soil.

Competency:

The student will be able to explain the need for conserving natural resources.

20. Too much water in the soil, by reducing aeration, can affect the growth of:

    a. Parent material
    b. Organic matter
    c. Plants
    d. Insects

21. In a particular field the water table is affected by which of the following soil characteristics?

    a. Texture
    b. Drainage
    c. Color
    d. Survey

TRUE(A) OR FALSE(B)

A B 22. Putting in soil tiles improves the drainage capability of soil.

Competency:

The student will be able to identify agencies involved in conservation of natural resources.

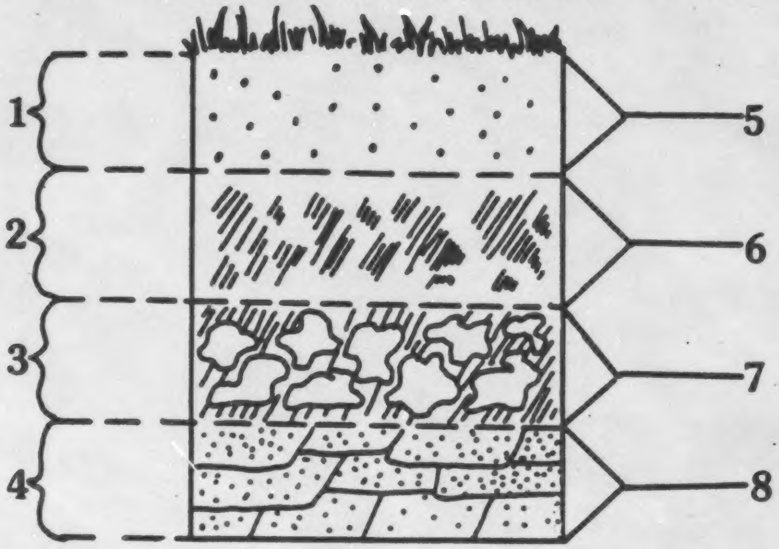
23. The Soil Conservation Service is in the:

    a. Department of Agriculture
    b. Cooperative Extension Service
    c. Department of the Interior
    d. United States Forest Service

Competency:

The student will be able to describe soil classification.

Use the picture below to answer Questions 24 - 31. On the answer sheet, darken completely the circle of the number of the best answer to each of the following questions.



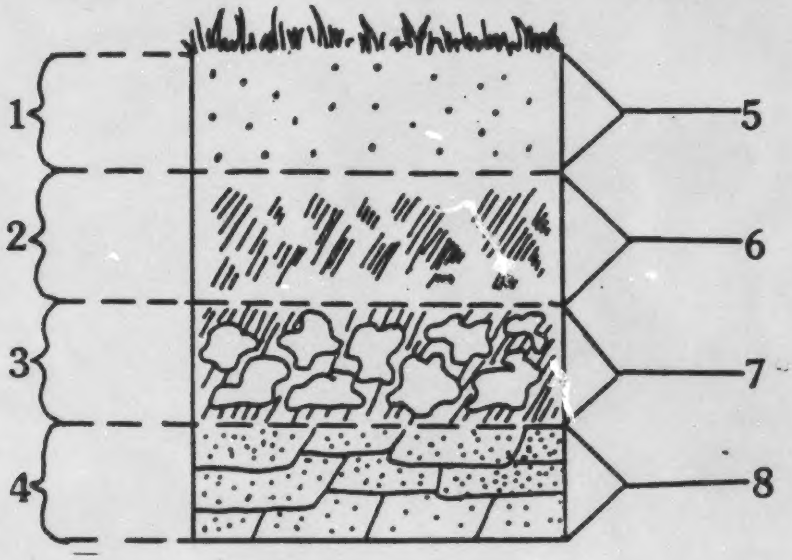
24. Soil found in Section 1 is classified as:

    a. Surface soil
    b. Bedrock
    c. Subsoil
    d. Parent material

25. Soil found in Section 4 is classified as:

    a. Surface Soil
    b. Bedrock
    c. Subsoil
    d. Parent material

26. Soil found in Section 2 of the picture below is classified as:



a. Surface soil
b. Bedrock
c. Subsoil
d. Parent material

27. Soil found in Section 3 is classified as:

a. Surface soil
b. Bedrock
c. Subsoil
d. Parent material

28. Soil found in Section 5 belongs to the:

a. R-Horizon
b. E-Horizon
c. B-Horizon
d. A-Horizon

29. Soil found in Section 6 belongs to the:

a. R-Horizon
b. E-Horizon
c. B-Horizon
d. A-Horizon

30. Soil found in Section 7 belongs to the:

a. R-Horizon
b. E-Horizon
c. B-Horizon
d. A-Horizon

31. Soil found in Section 8 belongs to the:

a. R-Horizon
b. E-Horizon
c. B-Horizon
d. A-Horizon

TRUE(A) OR FALSE(B)

A B 32. There are five classifications of land.

A B 33. Class I land has many restrictions on the ways it can be used.

A B 34. Class IV land is composed of soils having few limitations that restrict their use.

A B 35. "Soil Identification" is the logical grouping of individual soil into groups.

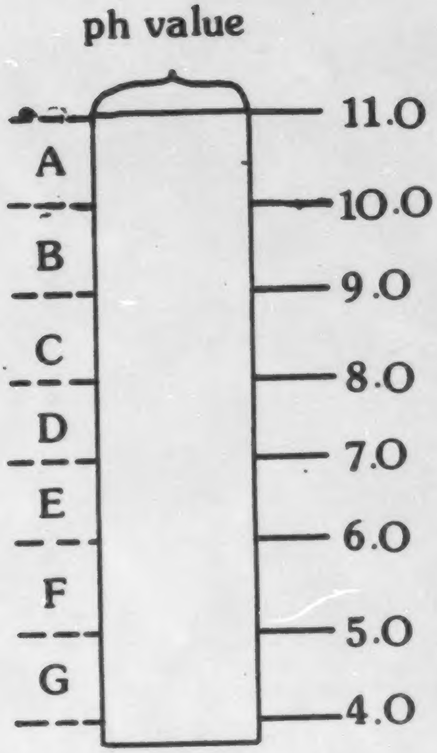
A B 36. "Soil Classification" is the recognition of an individual soil into groups.

A B 37. "Soil Series" is a group of soils similar to one another.

Competency:

The student will be able to identify methods used in determining soil nutrient deficiencies.

Use the picture below to answer Questions 38-41.


ph value
A
B
C
D
E
F
G
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0

38. A soil that has a pH that falls in region A on the diagram is classified as:

a. Strong acid
b. Weak acid
c. Strong alkaline
d. Neutral

39. A soil that has a pH that falls into region E on the diagram, is classified as:

a. Slight alkaline
b. Strong acid
c. Slight acid
d. Strong alkaline

40. If a soil were to be classified as being neutral, its pH would be:

a. 6.8
b. 4.5
c. 10.0
d. 7.0

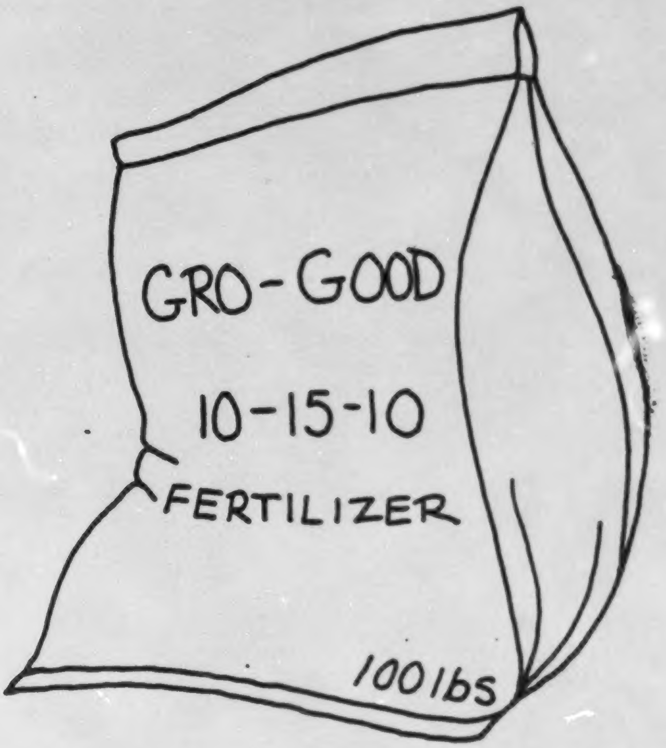
41. A soil with a pH in region G is classified as:

a. Strong acid
b. Slight alkaline
c. Strong alkaline
d. Neutral

Competency:

The student will be able to identify major fertilizer elements.

Use the picture below to answer questions 42 - 46.



42. What is the analysis of the bag of fertilizer above?

a. 5-10-20
b. 10-15-10
c. 10-20-12
d. 10-10-10

43. What nutrients do 10-15-10 stand for?

a. Nitrogen, phosphorous, sulfur
b. Nitrogen, phosphorous, calcium
c. Calcium, phosphorous, lime
d. Nitrogen, phosphorous, potassium

44. How many pounds of nitrogen are in the bag of fertilizer?

a. 0 lbs.
b. 5 lbs.
c. 10 lbs.
d. 15 lbs.

45. How many pounds of phosphorous are in the bag of fertilizer?

a. 0 lbs.
b. 5 lbs.
c. 10 lbs.
d. 15 lbs.

46. How many pounds of this fertilizer would have to be used to get 50 lbs. of nitrogen?

a. 50 lbs.
b. 100 lbs.
c. 400 lbs.
d. 500 lbs.

MACRONUTRIENTS(A) OR MICRONUTRIENTS(B)

A B 47. Phosphorous

A B 48. Carbon

A B 49. Iron

A B 50. Hydrogen

A B 51. Nitrogen

A B 52. Copper

A B 53. Manganese

A B 54. Potassium

A B 55. Zinc

A B 56. Oxygen

A B 57. Magnesium

A B 58. Molybdenum

A B 59. Calcium

A B 60. Boron

A B 61. Clorine

A B 62. Sulfur

petency:

student will be able to develop land and soil records.

The common land measurement that is equal to 1/640 square mile, is the:

a. Rod
b. Acre
c. Hectare

The unit of metric measurement that is equivalent to 2.471 acres or 10,000 square meters is the:

a. Rod
b. Acre
c. Hectare

petency:

student will be able to identify major careers in soil ence.

An individual who assists land owners and operators in the application and maintenance of conservation and is usually employed by a governmental agency is a Soil:

a. Conservation Technician
b. Scientists
c. Conservation Aide

Which of the following professions requires a college degree in soil science, is primarily concerned with collecting information about the soil through examination and records the information on maps?

a. Soil scientist
b. Soil conservationist
c. Agronomist

ANSWER KEY

SOIL SCIENCE

TEST ITEM	ANSWER
1	A
2	C
3	B
4	C
5	A
6	A
7	B
8	A
9	A
10	A
11	C
12	A
13	B
14	C
15	B
16	C
17	D
18	B
19	B
20	C
21	B
22	A
23	A
24	A
25	B
26	C
27	D
28	D
29	C
30	B
31	A
32	B
33	B
34	B
35	B
36	B
37	A
38	C
39	C
40	D
41	A
42	B
43	D
44	C
45	D

Soil Science

Test Item	Answer
46	D
47	A
48	A
49	A
50	A
51	A
52	B
53	B
54	A
55	A
56	A
57	B
58	B
59	B
60	B
61	B
62	A
63	B
64	C
65	A
66	A